

Service Manual

PIONEER
The Art of Entertainment

• KEH-3500/EW



ORDER NO.
CRT1501

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

KEH-3500SDK

WG

KEH-3500

EW, IT

KEH-2500SDK

WG

KEH-2500

EW, IT, X1B/EW, X1B/IT

Note:

- See the separate manual CX-197 (CRT1328) for the cassette mechanism description.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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EK NOV. 1992 Printed in Japan

SPECIFICATIONS

General

Power source 14.4 V DC (10.8 – 15.6 V allowable)
 Grounding system Negative type
 Max. current consumption 5.6 A
 Dimensions (chassis) 180 (W) x 50 (H) x 150 (D) mm
 (front face) 188 (W) x 58 (H) x 17.4 (D) mm
 Weight 1.4 kg

Amplifier

Maximum power output 25 W x 2/15 W x 4 (EIAJ)
 Continuous power output 11 W x 2 (1% dist. at 1 kHz)
 Load impedance 4 Ω (4 – 8 Ω allowable)
 Preout output level /output impedance
 (KEH-3500) 500 mV/1k Ω
 Tone controls (bass) ± 10 dB (100 Hz)
 (treble) ± 10 dB (10 kHz)
 Loudness contour +8 dB (100 Hz) (Volume: -30 dB)

Tape player

Tape Compact cassette tape (C-30 – C-90)
 Tape speed 4.76 cm/sec. (+0.14 cm/sec., -0.05 cm/sec.)
 Fast forward/rewind time Approx. 100 sec. for C-60
 Wow & flutter 0.13 % (WRMS)
 Frequency response
 (KEH-3500) Metal: 40 – 17,000 Hz (± 3 dB)
 (KEH-2500) 40 – 14,000 Hz (± 3 dB)
 Stereo separation 45 dB

Signal-to-noise ratio

(KEH-3500) ... Metal: Dolby B NR IN: 63 dB (IEC-A network)
 Dolby NR OUT: 55 dB (IEC-A network)
 (KEH-2500) 52 dB (IEC-A network)

FM tuner

Frequency range 87.5 – 108 MHz
 Usable sensitivity 11 dBf (1.0 μ V/75 Ω , mono, S/N: 30 dB)
 50 dB quieting sensitivity 16 dBf (1.7 μ V/75 Ω , mono)
 Signal-to-noise-ratio 70 dB (IEC-A network)
 Distortion 0.3 % (at 65 dBf, 1 kHz, stereo)
 Frequency response 30 – 15,000 Hz (± 3 dB)
 Stereo separation 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range 531 – 1,602 kHz
 Usable sensitivity 18 μ V (25 dB) (S/N: 20 dB)
 Selectivity 50 dB (± 9 kHz)

LW tuner

Frequency range 153 – 281 kHz
 Usable sensitivity 30 μ V (30 dB) (S/N: 20 dB)
 Selectivity 50 dB (± 9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

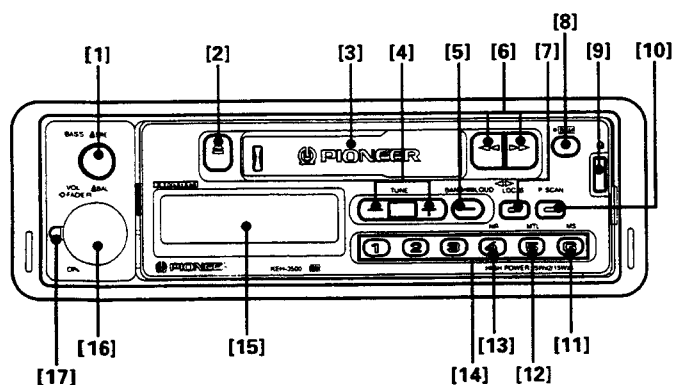


Fig. 1

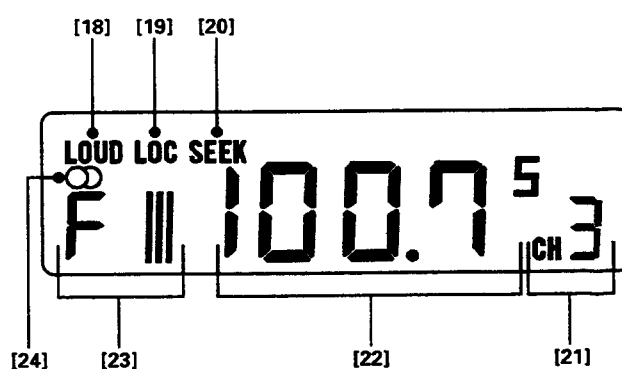


Fig. 2

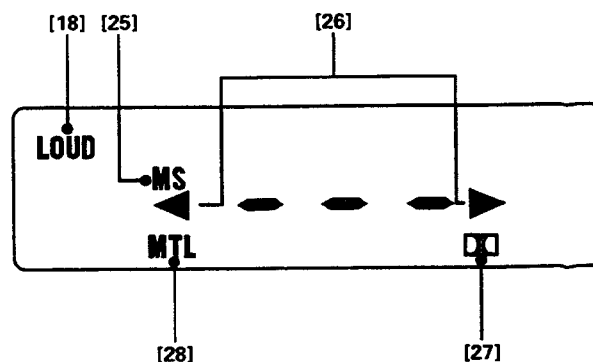


Fig. 3

1. CONNECTION THE UNITS

Note:

- This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.
- To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.
- Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.
- Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.
- Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.
- Do not shorten any leads. If you do, the protection circuit may fail to work when it should.
- Never feed power to other equipment by cutting the insulation of the power supply lead of the unit and tapping into the lead. The current capacity of the lead will be exceeded, causing over heating.

- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.
- Replace fuses only with the types stipulated on the fuse holder.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.
- Speakers connected to this unit must be high-power types possessing minimum rating of 25W and impedance of 4 to 8 ohms. Connecting speakers with output and / or impedance values other than those noted here can damage the speakers.

(Fig. 4)

1. Antenna jack
2. Black (ground)
To vehicle (metal) body.
3. Red
To electric terminal controlled by ignition switch (12 V DC) ON / OFF.
4. Orange
To terminal always supplied with power regardless of ignition switch position.
5. Fuse resistor
6. Fuse holder
7. Green
8. Gray
9. Green / black
10. Gray / black
11. Green / red
12. Gray / red
13. Front / left speaker
14. Front / right speaker
15. Rear / left speaker
16. Rear / right speaker
17. With a 2 speaker system, connect to the 2 speakers in the front or the rear.
18. Blue
KEH-2500
Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
KEH-3500
To system control terminal of the power amp or Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
- KEH-3500**
19. Rear out
20. Red
21. White
22. Connecting cords with RCA pin plugs (sold separately)
23. Blue
24. Power amp (sold separately)
25. Use this for connections when you have the separately available amplifier.

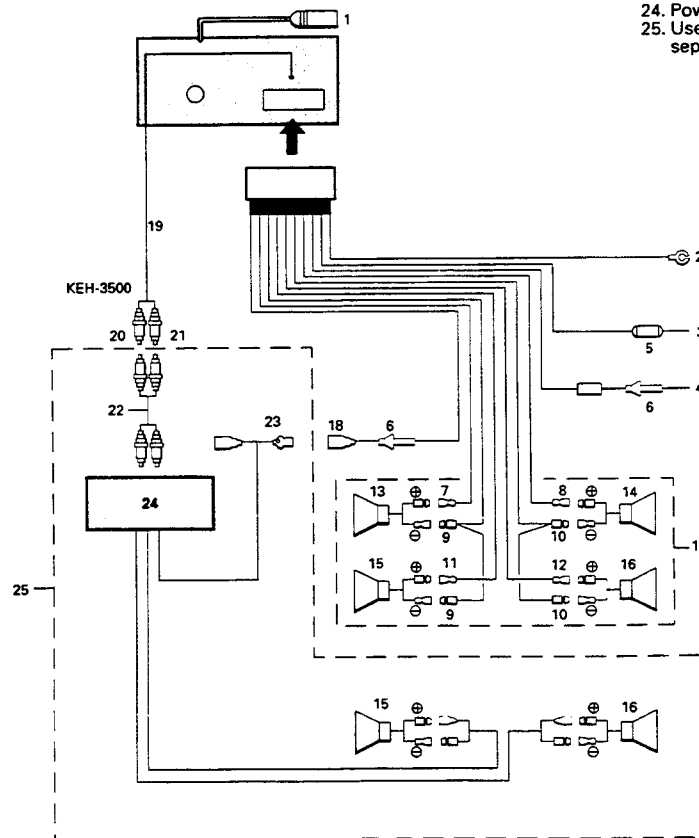


Fig. 4

2. USING THE RADIO

Parts Identification

(Fig. 1)

- [1] Bass / Treble
- [4] Tuning
- [5] Band / Loudness
- [7] Local Station
- [8] Best Stations Memory (BSM)
- [10] Preset Scan
- [14] Preset
- [15] Display
- [16] Volume / Balance / Power Switch
- [17] Fader

(Fig. 2)

- [18] Loudness
- [19] Local Station
- [20] Seek
- [21] Preset Number
- [22] Frequency
- [23] Band
- [24] Stereo

Listening to the Radio

- **Before attempting operation...**
- Set the fader control [17] to the left horizontal.
- 1. Turning the power switch [16] to the right causes power to switch ON and the current frequency to appear on the display [22].
- Since the set is designed preferentially for tape play, eject a cassette tape, if mounted, before operating the radio.

Fader Control

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control [17] to the upward decreases the volume of the rear speakers, while turning it to the downward decreases the volume of the front speakers with 2-speaker systems, set this control [17] to a horizontal.

Loudness Control

When playing back a tape or listening to the radio at low volume, the low tone is emphasized and more clearly heard by pressing 2 seconds this switch [5].

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.

1. Press the button [10], and the preset number [21] flash.
Each station assigned to the buttons in Bank [14] will be automatically tuned in for about 8 seconds.
2. When you hear a station that you like, press button [10] again to cancel preset scan tuning and remain at that station.

2. Press the button [5] to select the band.
 - Switching between FM and MW / LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531 kHz to 1,602 kHz, and the LW band is from 153 kHz to 281 kHz.
3. Press both ends of the button [4] and the seek tuning indicator will appear on the display [20].
4. Press either the left or right side of the button [4] to tune in the desired frequency. (Pressing the right side will increase the frequency.)
5. Adjust the volume and balance. To adjust the balance, first pull the knob [16] until a click is heard. After setting to the desired level, push the knob [16] in again to its original position.
6. Adjust the tone [1]. To adjust the treble, first pull the knob [1] until a click is heard. After setting to the desired level, push the knob [1] in again to its original position.
- **To enter a frequency into the preset memory...**
7. Hold down one of the buttons in Bank [14] for approximately 2 seconds. The frequency is stored in memory (assigned to the button in Bank [14] pressed) once the preset number stops flashing on the display [21].
6 FM1 frequencies, 6 FM2 frequencies, 6 FM3 frequencies and 6 MW and LW frequencies can be entered.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has four seek tuning sensitivity levels for FM and 2 levels for MW / LW to match local conditions.

Changing the Local Seek Sensitivity

1. Use button [5] to select a band.
2. Hold down the button [7] for more than 2 seconds, and the display will show you the current local seek sensitivity for about 5 seconds.
3. While the local seek sensitivity remains on the display, press the (+) side of button [4] to increase the sensitivity level, and the (-) side to decrease the level as shown below.
FM : L-1 = L-2 = L-3 = L-4
MW / LW : L-1 = L-2
The L-4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.
- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensitivity.

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [14], from strongest to weakest. It comes in handy when trying to find local stations while driving.

1. Press button [5] and select a band.
2. Holding down button [8] for about 2 seconds will start BSM search. At this time, " - - - " will flash on the display.
3. The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [14].
 - At the end of the BSM search, the displayed frequency is that assigned to button [1] of Bank [14].
 - If there are fewer than 6 strong stations in the area, some of the buttons in Bank [14] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.
 - BSM search may take as long as 30 seconds in areas where there are few strong stations.
 - You can cancel BSM search by pressing button [8] again.

Switching between Local and DX

Press button [7] to switch between Local and DX (distant) seek tuning. When "LOC" [19] is shown on the display, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning

Use manual tuning when stations are too weak to be picked up by seek tuning.

1. Press both (+) and (-) sides of button [4] at the same time to clear "SEEK" [20].
2. Each press of the (+) side of button [4] increases the frequency in 50 kHz steps in the FM band, 9 kHz in the MW band and 1 kHz in the LW band. Pressing the (-) side of button [4] decreases the frequency. Holding down either side of button [4] changes the frequency at high speed.

3. USING THE TAPE DECK

Parts Identification

(Fig. 1)

- [1] Bass / Treble
- [2] Eject
- [3] Cassette Door
- [5] Loudness
- [6] Fast Forward, Rewind / Direction Change
- [11] Music Search (KEH-3500)
- [12] Tape Select (KEH-3500)
- [13] Dolby B NR (KEH-3500)
- [15] Display
- [16] Volume / Balance / Power Switch
- [17] Fader

(Fig. 3)

- [18] Loudness
- [25] Music Search (KEH-3500)
- [26] Direction
- [27] Dolby B NR (KEH-3500)
- [28] Metal (KEH-3500)

About cassette tapes

- Do not use tapes longer than C-90-type (90 min.) cassettes. Longer tapes can interfere with tape transport.
- Storing cassettes in areas directly exposed to sunlight or high temperatures can distort them and subsequently interfere with tape transport.

- Be sure to eject the tape when the vehicle's ignition is turned OFF. Leaving the tape in the unit can deform the pinch roller causing wow and flutter during playback.

Changing Program

Push the fast forward and rewind buttons [6] together to switch from one side of the tape to the other (from Side A to Side B or vice versa).

Using Fast Forward and Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons [6] can be regarded as fast forward / rewind buttons. For fast forward, press the high-speed tape transport button [6] that corresponds to the direction that is shown by the direction indicator [26]. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse). For rewind, press the button [6] that is opposite that of the direction shown by the direction indicator [26]. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

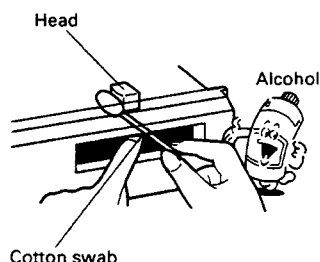
When you release fast forward / rewind, lightly press button [6] located on the opposite side of the one you pressed to fast forward or rewind.



- Store unused tapes in a tape case where there is no danger of them becoming loose or being exposed to dust.

Cleaning the head

If the playback head becomes dirty, sound quality will suffer. Periodically (once or twice a month) clean the head with a cotton swab soaked with alcohol.



Using Music Search (KEH-3500)

Returning to the beginning of selection A
Press the button [11] ("MS" [25] appears) and then the high-speed tape transport button [6] for the direction opposite that is shown by the direction indicator [26]. Playback will automatically start from the beginning of selection A.

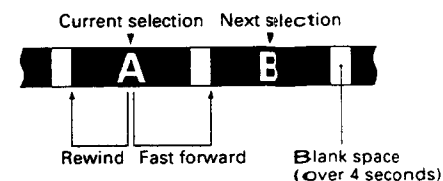
Moving from selection A to selection B
Press the button [11] ("MS" [25] appears) and then the high-speed tape transport button [6] that corresponds to the direction shown by the direction indicator [26]. Playback will automatically start from the beginning of selection B.

To enable regular fast forward / rewind operations, press the button [11] again ("MS" [25] turns off) to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections less than 4 seconds — the blank portion cannot be detected by the unit.
- Pauses in recorded conversations longer than 4 seconds — the unit reads these as blanks between selections.
- Portions recorded at very low volume for more than 4 seconds — the unit reads these as blanks between selections.

Listening to a tape

- Before attempting operation...
- Set the fader control [17] to the left horizontal.
- 1. Turning the power switch [16] to the right causes power to switch ON.
- 2. Loading a cassette tape into the load slot [3] causes playback to begin automatically.
- 3. Adjust the volume and balance. To adjust the balance, first pull the knob [16] until a click is heard. After setting to the desired level, push the knob in [16] again to its original position.
- 4. Adjust the tone [1]. To adjust the treble, first pull the knob [1] until a click is heard. After setting to the desired level, push the knob [1] in again to its original position.
- 5. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, press the button [2].
- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.
- Loose tapes should be rewound with the aid of a pencil and unevenly wound tapes rewound with the use of the fast forward function.



Dolby B NR (KEH-3500)

To hear a tape recorded using a Dolby NR system, press the button [3]. ("□" [27] appears.)

- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Tape Selector (KEH-3500)

When using metal tapes and chrome tapes, press button [12]. ("MTL" [28] appears.)

4. DISASSEMBLY

• Removing the Case

1. Insert and turn a flat screwdriver to remove the case.

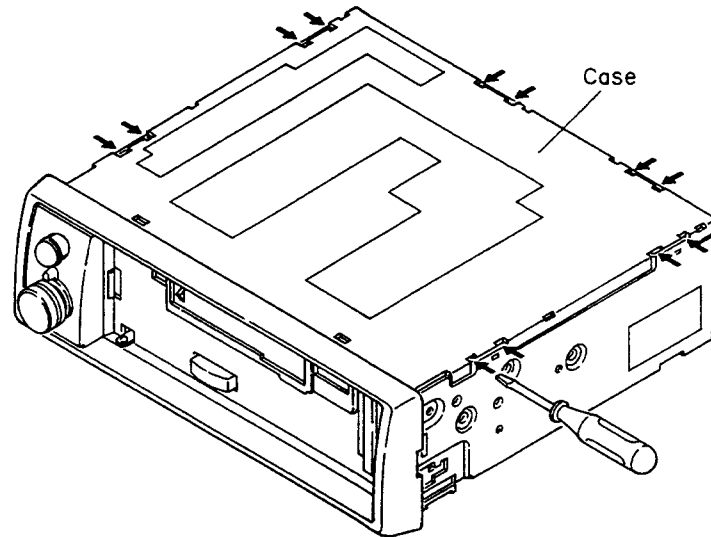


Fig. 5

• Removing the Panel Unit

1. Remove the two knobs.
2. Disengage the two claws indicated by arrows.
3. Disconnect the connector and then remove the panel unit.

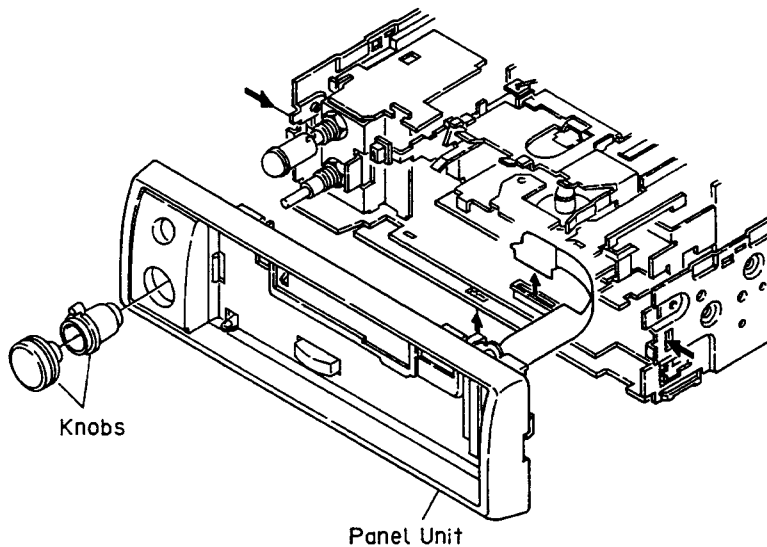


Fig. 6

● Removing the Cassette Mechanism Assy

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism assy.

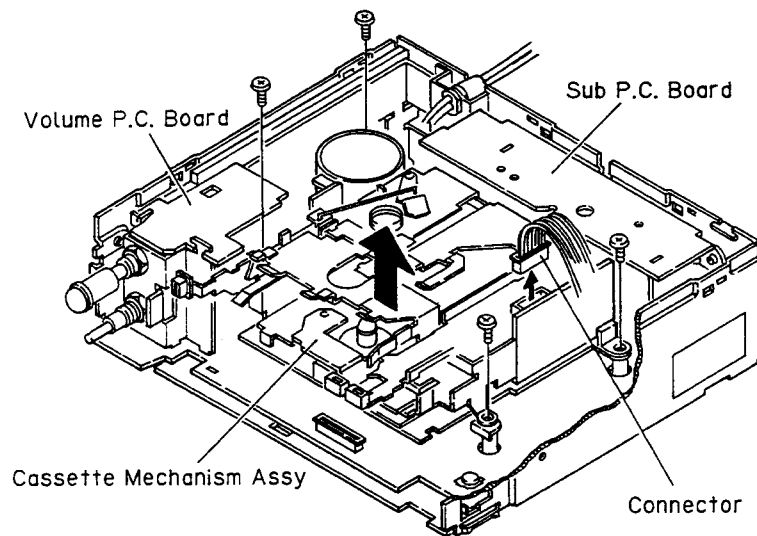


Fig. 7

● Removing the Tuner Amp P.C. Board

1. Remove the five screws and remove the holder.
2. Raise up on tuner amp p.c. board to remove it from the chassis unit.

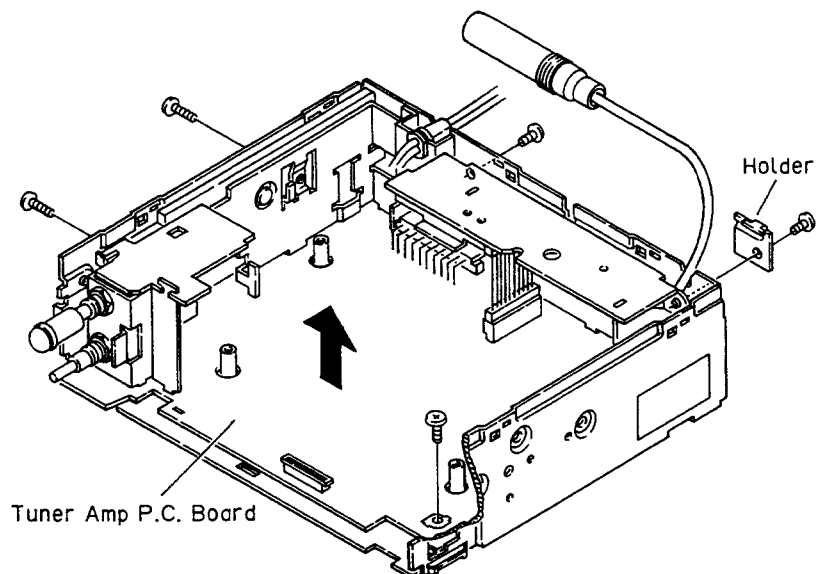


Fig. 8

5. ADJUSTMENT

● Connection Diagram

NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of SSG.

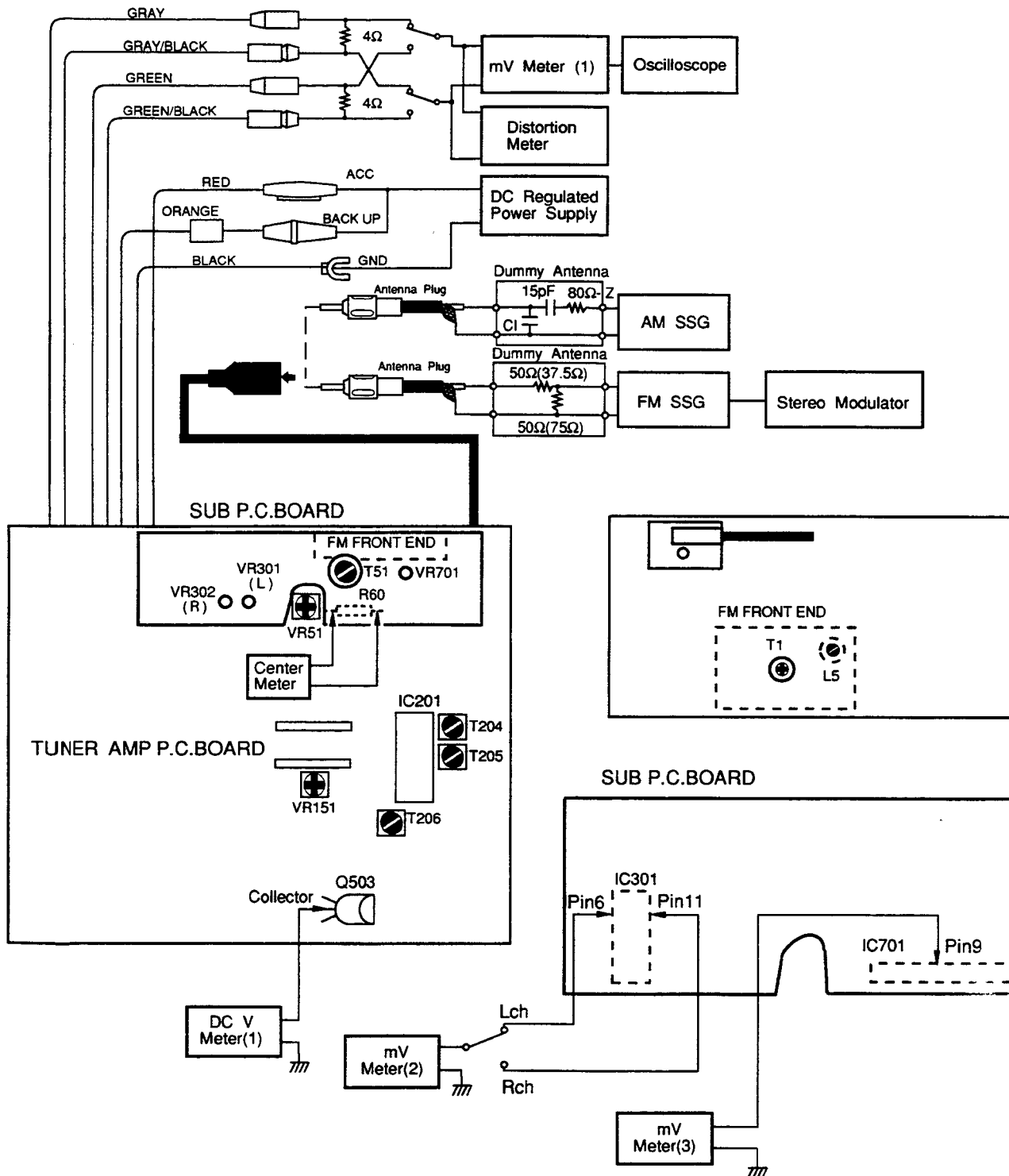


Fig. 9

DOLBY NR ADJUSTMENT
(KEH-3500SDK/WG,KEH-3500/EW,IT)

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150(400Hz,200nwb/m)	VR301(Lch)VR302(Rch)	mV Meter(2):-6dBs±1dB (DOLBY NR Switch:OFF)

FM ADJUSTMENT ※ Stereo MOD.: 1kHz,L+R=90% , Pilot=10%

	No.	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dB μ V)			
IF	1	98.1 Unmodulated	60	98.1	T51	Center Meter:0
Front End	1			108.0	L5	DC V Meter (1):6.2±0.2V
	2			87.5		Verify that DC V Meter(1) is more than 2.1±0.6V
	3	98.1	8	98.1	T1	mV Meter(1):Maximum
ARC	1	98.1※	35	98.1	VR151	mV Meter(1):Separation 5dB
WLMS	1	98.1	60	98.1		mV Meter(1):AdB
	2	98.1	10	98.1	VR51	mV Meter(1):A-3dB (3dB Down)

SDK ADJUSTMENT ※※SDK MOD.,SK(57kHz)=5%
(KEH-3500SDK/WG,KEH-2500SDK/WG)

	No.	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dB μ V)			
SDK	1	98.1※※	60	98.1	VR701	mV Meter(3):Maximum

MW/LW ADJUSTMENT

	No.	AM SSG(400Hz,30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dB μ V)			
Tuning Volt	1	(MW MODE)		1,602		Verify that DC V Meter (1) is less than 6.5V.
	2	(LW MODE)		153		Verify that DC V Meter (1) is more than 2.0V.
IF	1	999	20-25	999	T204,T205, T206	mV Meter(1):Maximum

6. BLOCK DIAGRAM

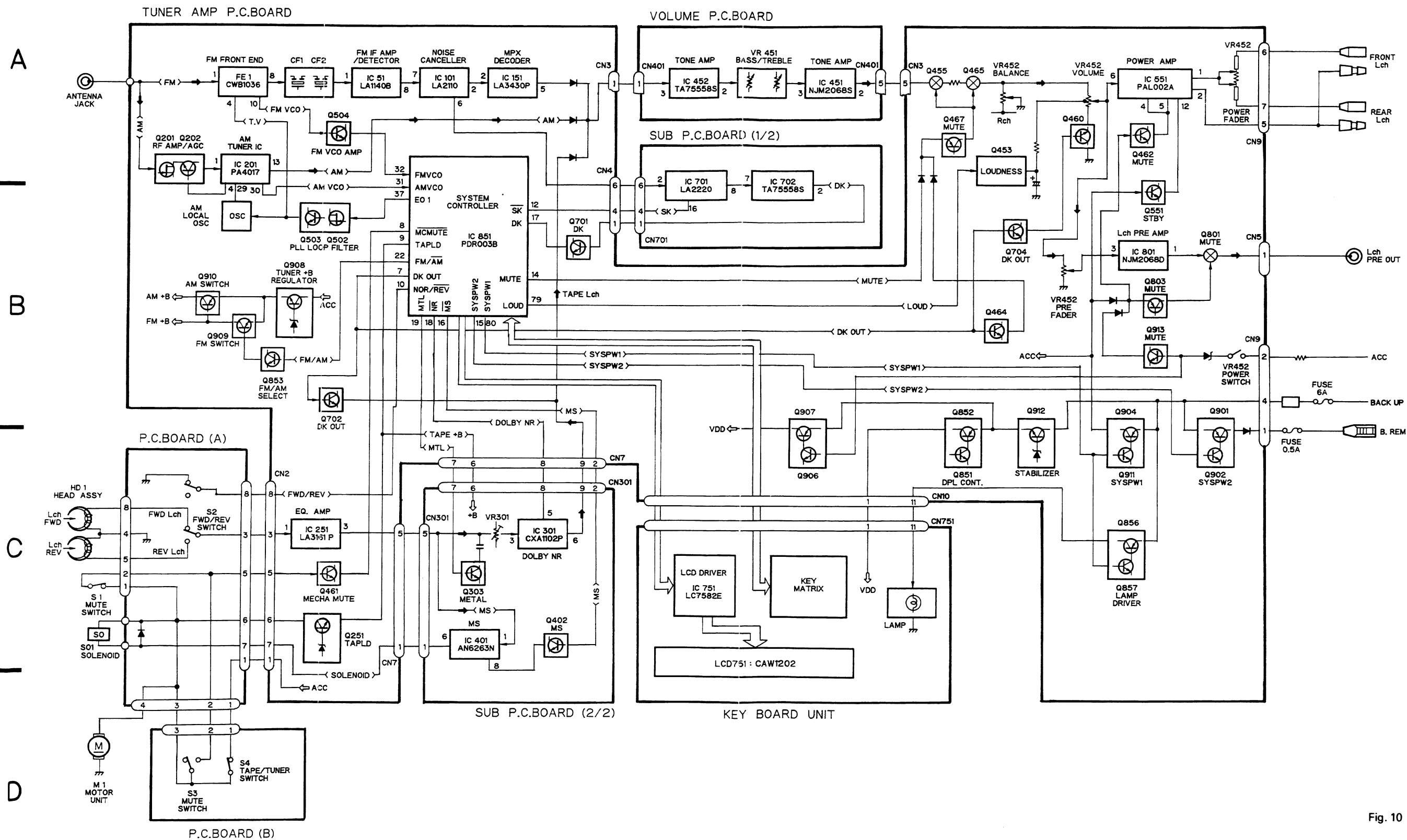
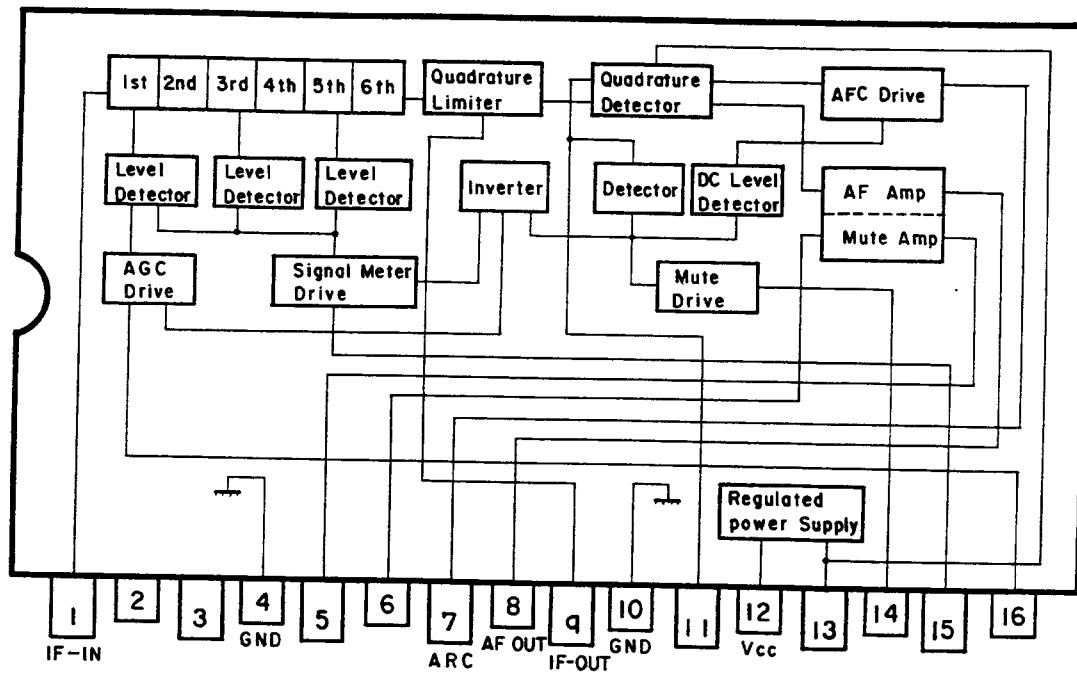


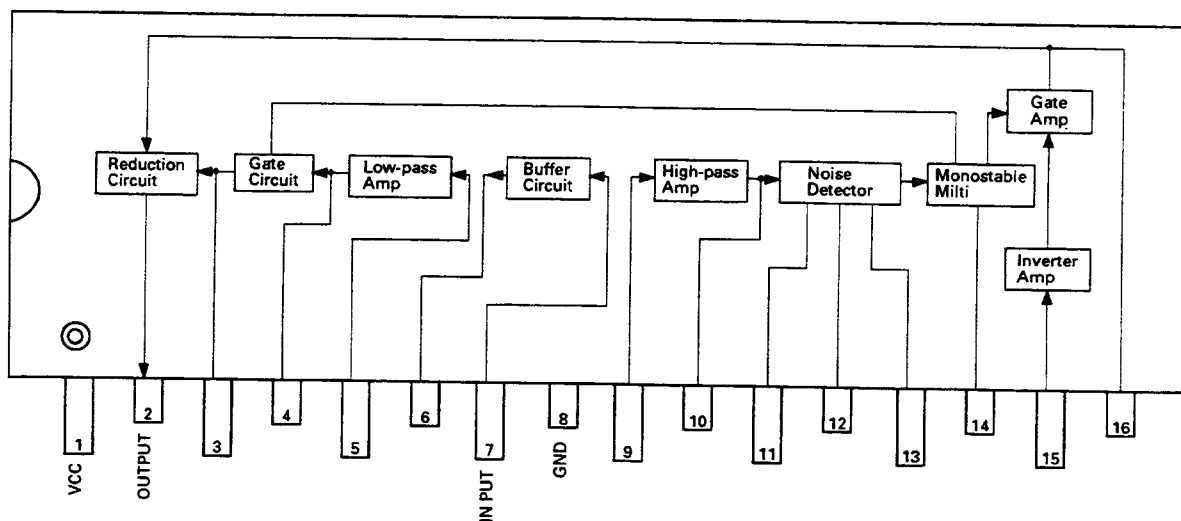
Fig. 10

•ICs

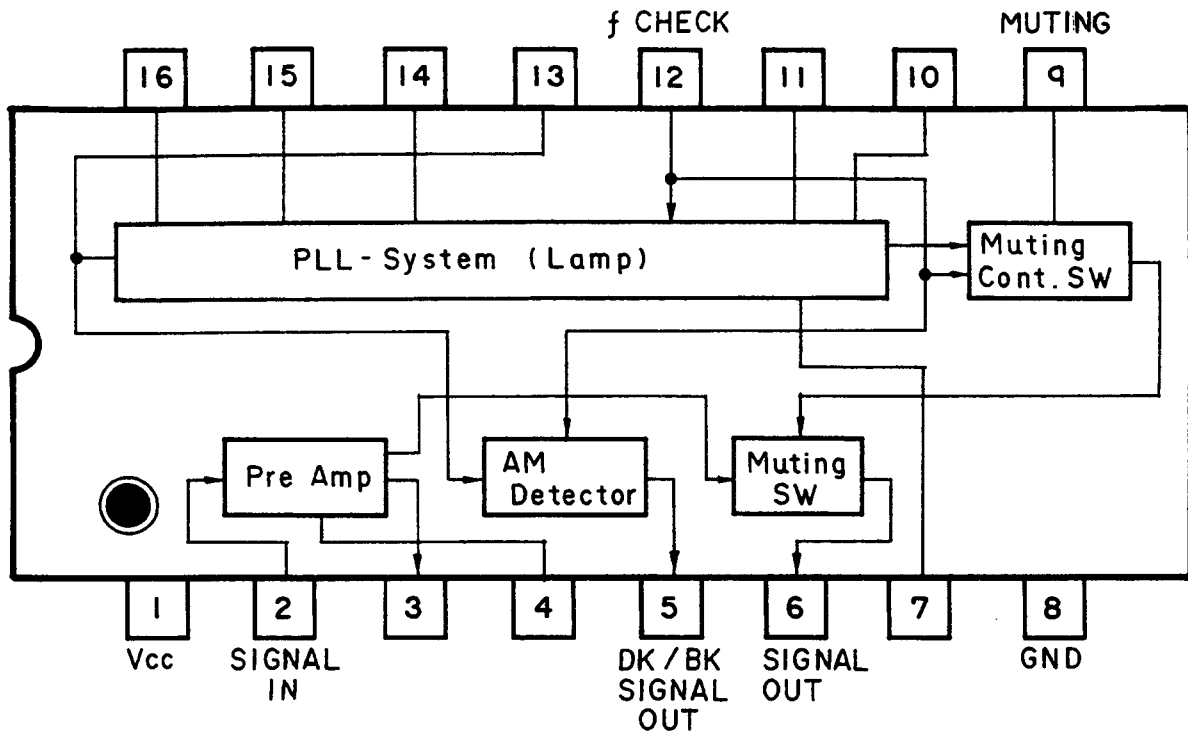
KA1140B



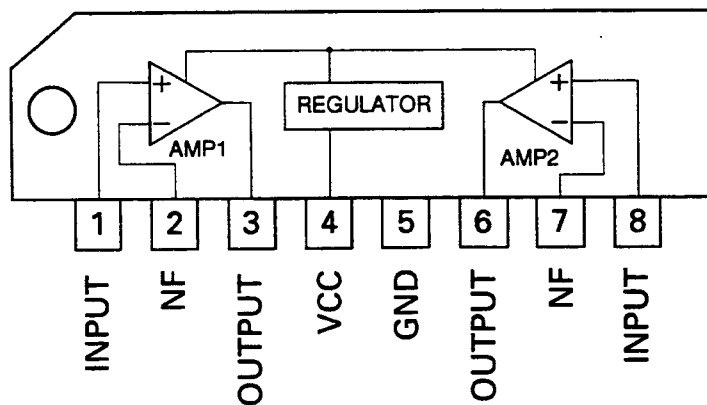
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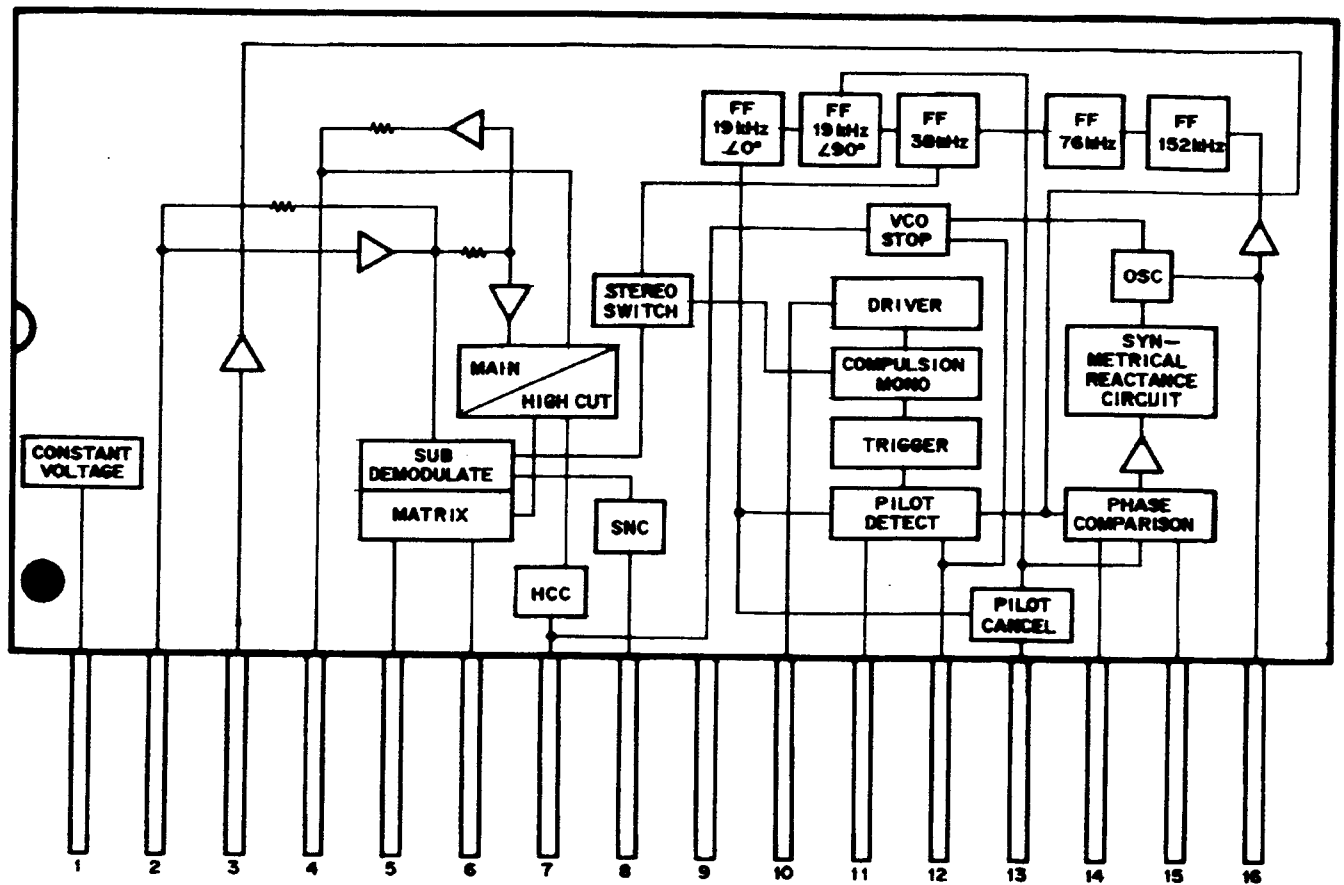
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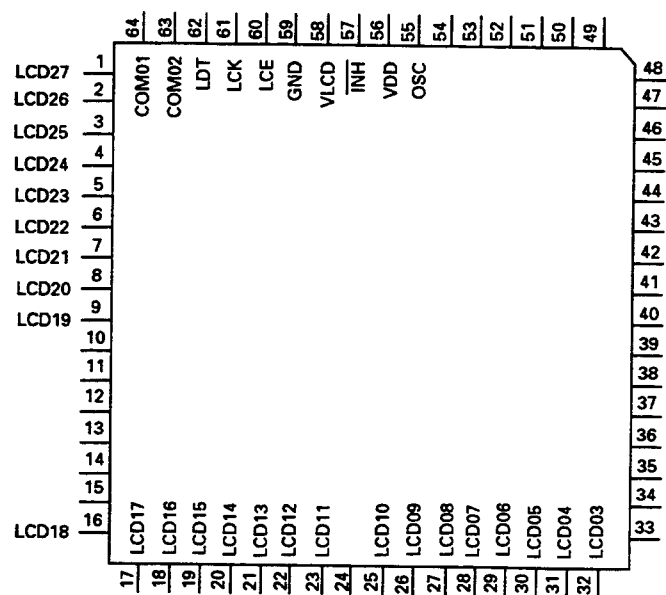
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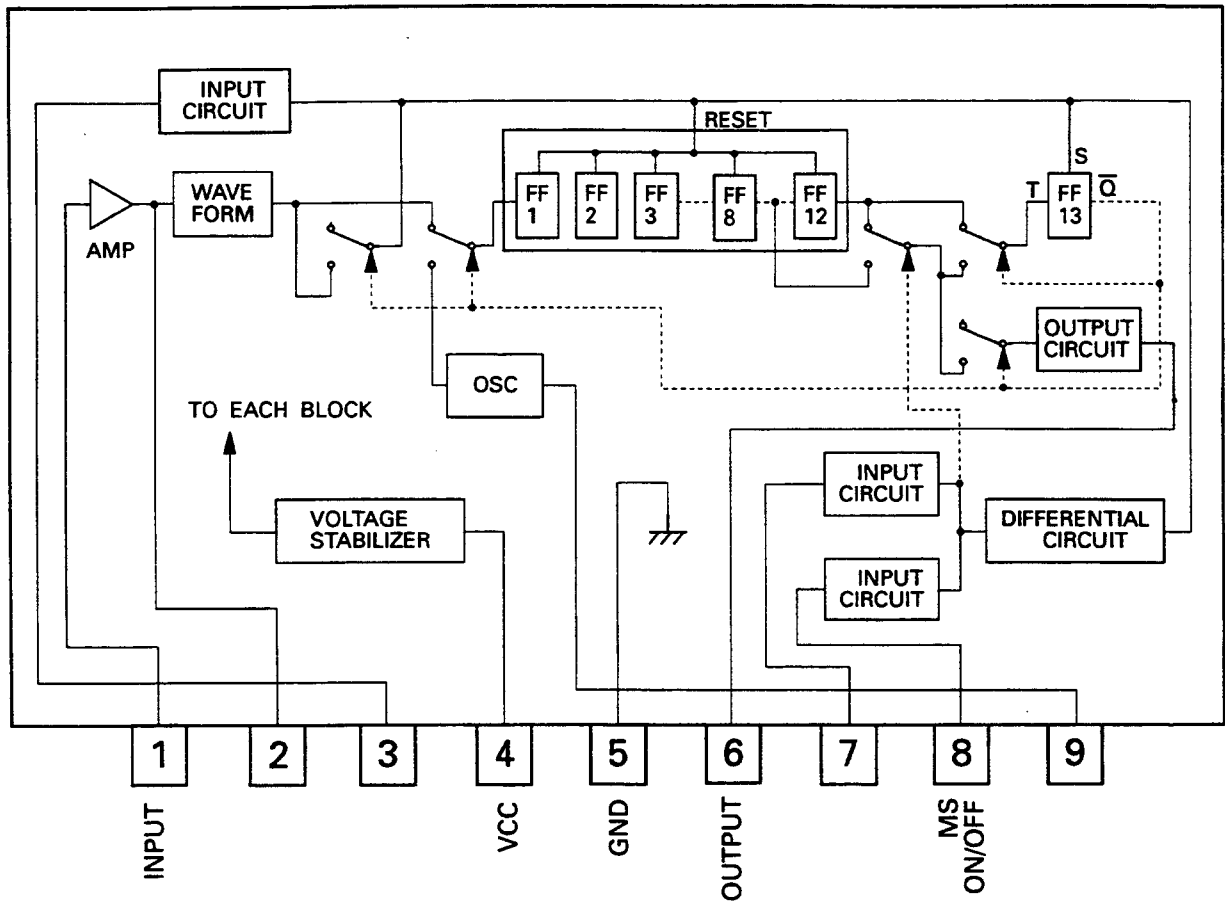


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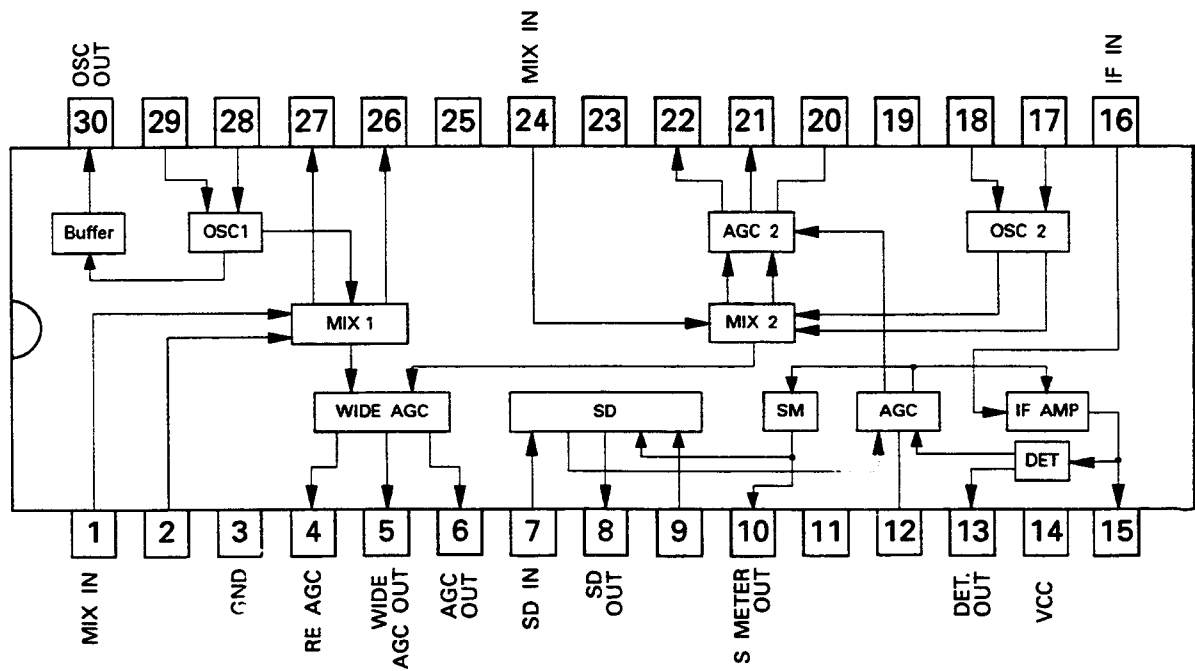


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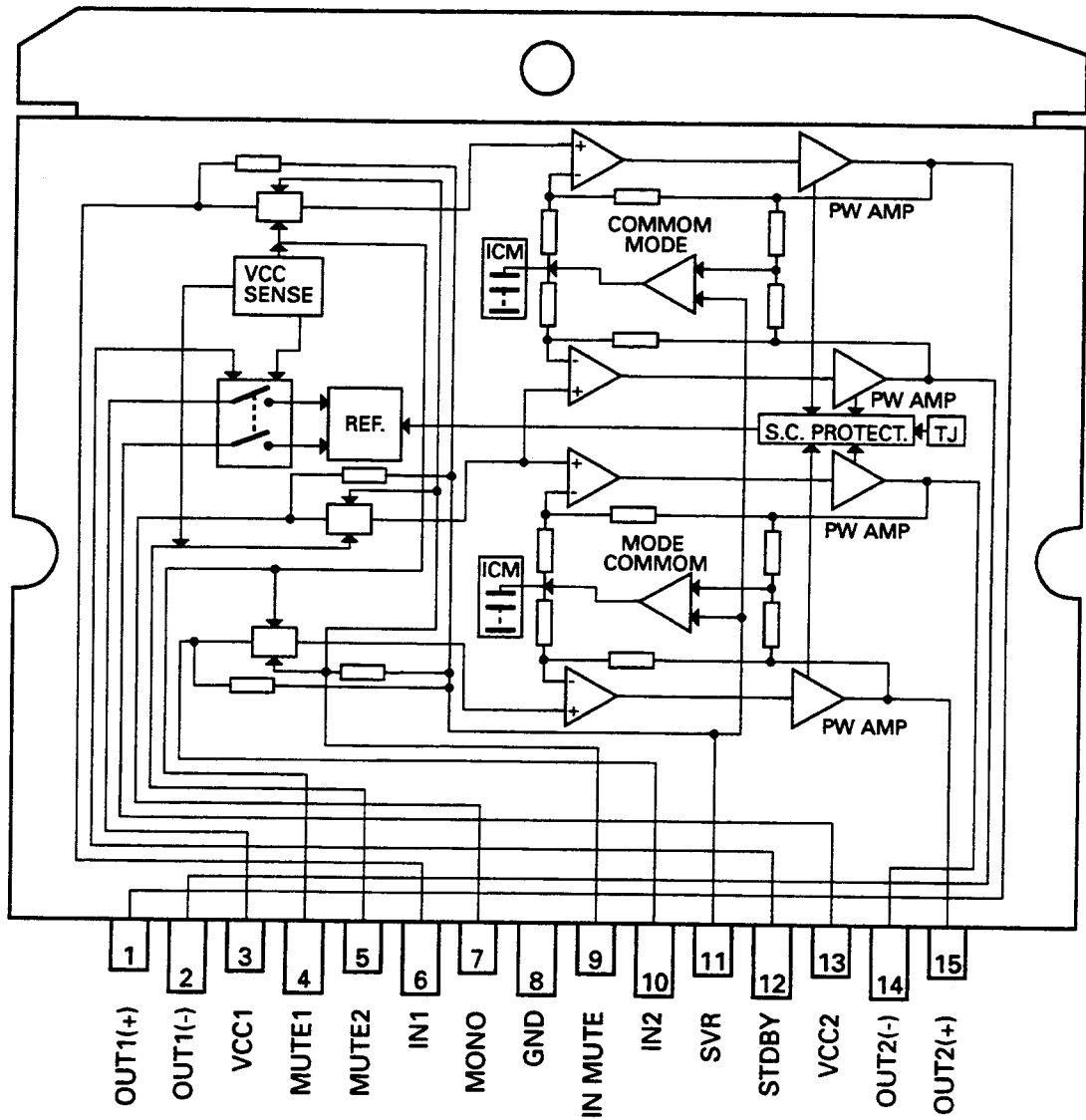




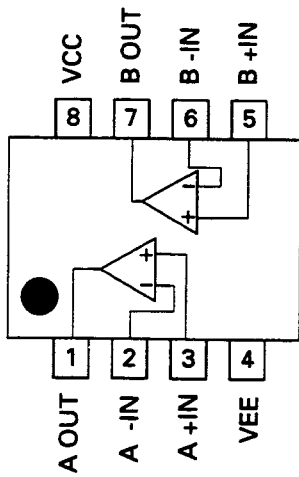
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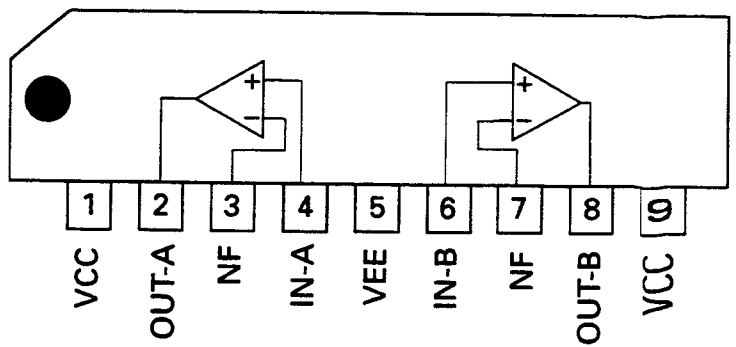
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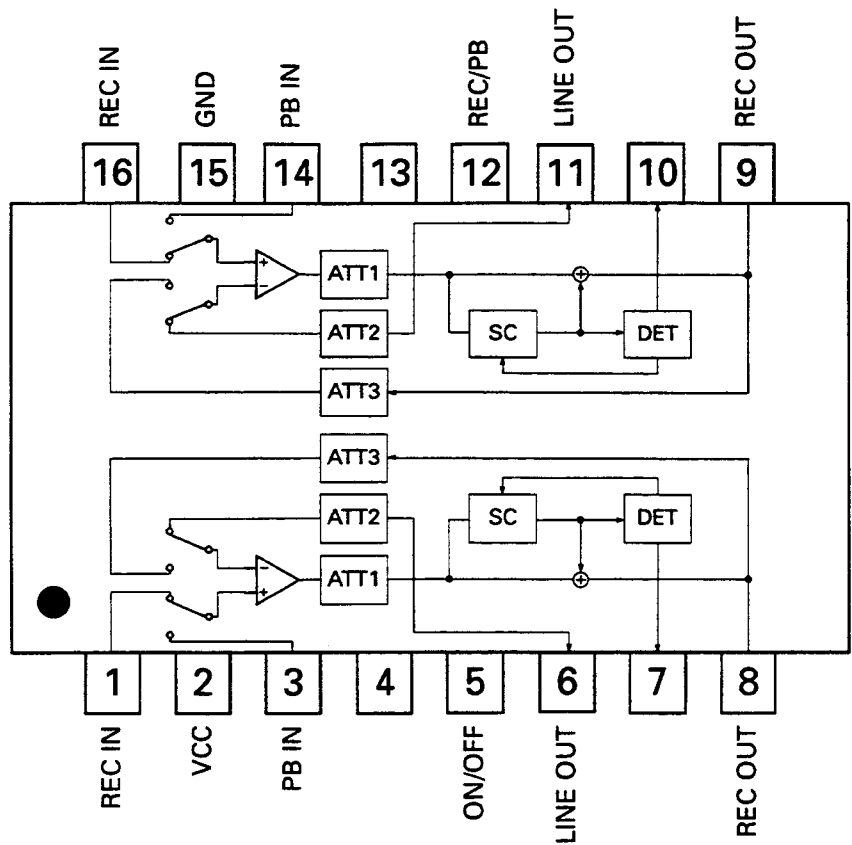
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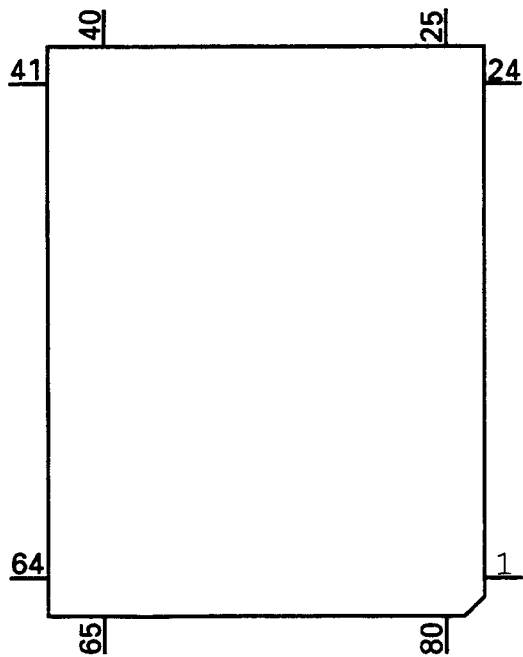
TA75558S



CXA1102P



*PDR003B



IC's marked by * are MOS type.
Be careful in handling them because they are very
liable to be damaged by electrostatic induction.

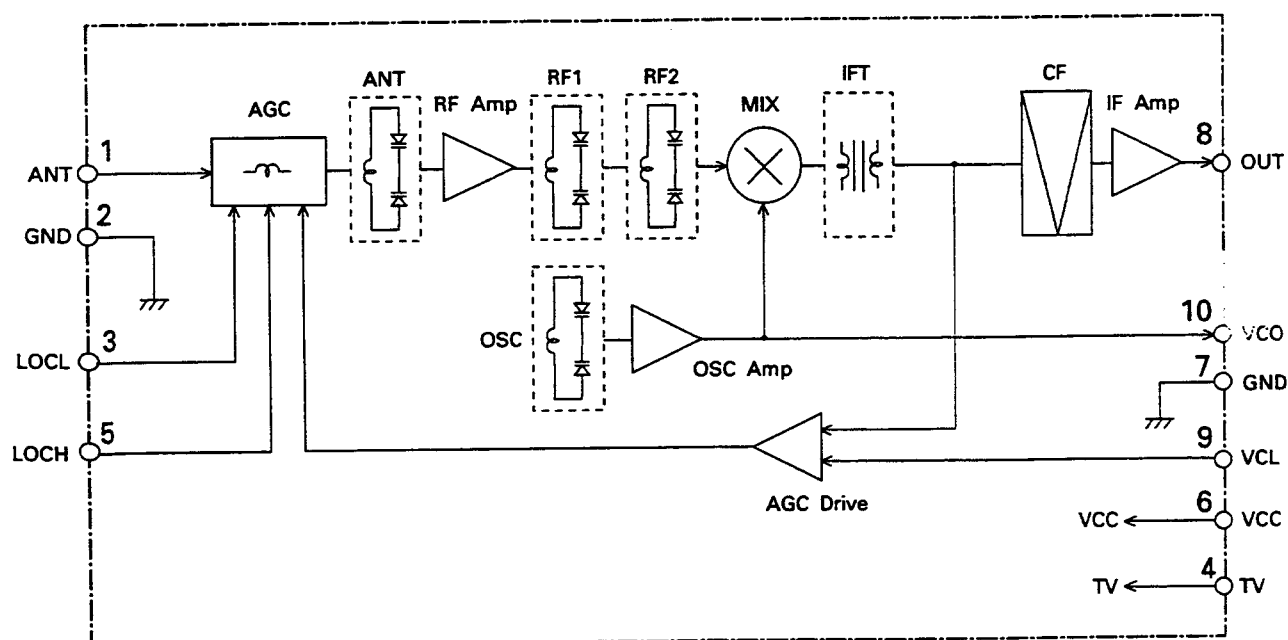
•Pin Functions (PDR003B)

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	KSD0	Output	C	Destination sense output
2	KSD1	Output	C	Function sense output
3—6	DM3—DM0	Input		Destination sense input
7	DKOUT	Output	C	SDK interruption output
8	MCMUTE	Input		Mechanism mute request input
9	TAPLD	Input		Tape loading input
10	NOR/REV	Input		Tape direction input
11				Not used
12	SK	Input		SK signal input
13	CE	CE		Chip enable(ACC sense input) L:ACC down
14	MUTE	Output	C	Mute output
15	SYSPW2	Output	C	System power output
16	MS	Output	C	Tape MS(Music search) output
17	DK	Input	C	DK signal input
18	METAL	Output	C	Tape METAL on/off output
19	NR	Output	C	Dolby NR on/off output
20				Not used
21	PEE	Output	C	Beep tone output
22	FM/AM	Output	C	FM/AM band select output
23	LOCL	Output	C	Local L setup output
24	LOCH	Output	C	Local H setup output
25	SEEK	Output	C	Outputs high signal during SEEK operation
26	SD	Input		SD signal input
27	AMIF	Input		AM IF input
28	SL	AD		Signal level input
29	ST	Input		Stereo broadcast detection signal input
30	VDD			Device power supply terminal
31	AMVCO	Input		AM VCO signal input
32	FMVCO	Input		FM VCO signal input
33	GND			GND
34	X0	Output		Crystal oscillating element connection pin
35	XI	Input		Crystal oscillating element connection pin
36				Not used
37	E01	Output	C	PLL error output
38—40				Not used
41	VDD			Device power supply terminal
42	LW	Output	C	Loop filter switching output for LW band
43, 44				Not used
45	LDT	Output	C	LCD data output
46	LCK	Output	C	LCD clock output
47	LCE	Output	C	LCD chip enable output
48	LINH	Output	C	LCD display inhibit output

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
49	DPLCNT	Output	C	Grille Power supply control output
50—74				Not used
75	DSSENS	AD		Detach sense input
76—78	KD2—KDO	AD		Analog key return input
79	LOUD	Output	C	Loudness output
80	SYSPW1	Output	C	System power output

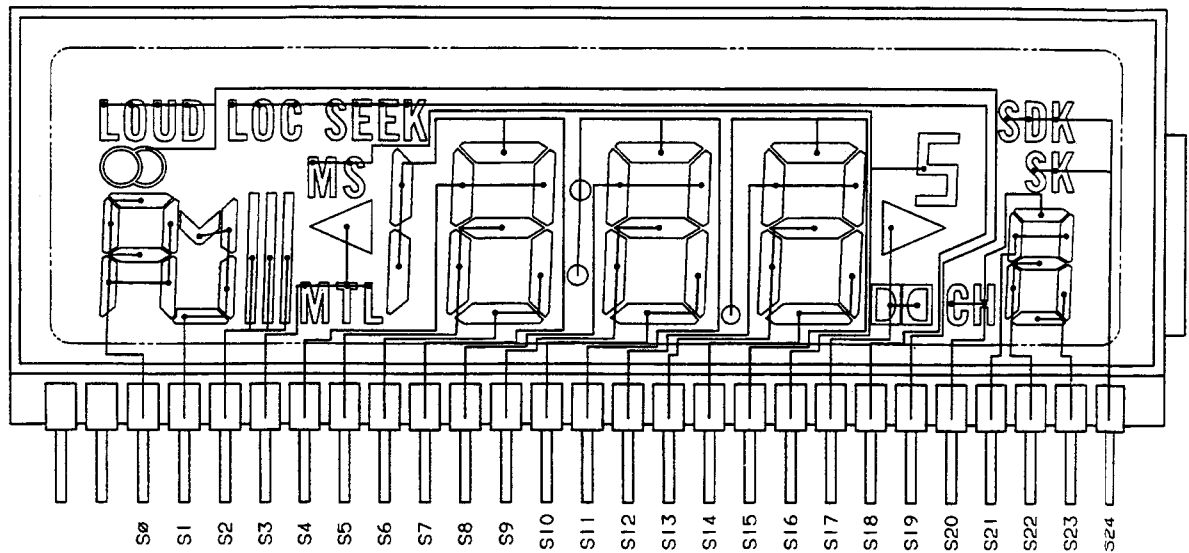
Output Format	Meaning
C	C-MOS

• FM FRONT END (CWB1036)

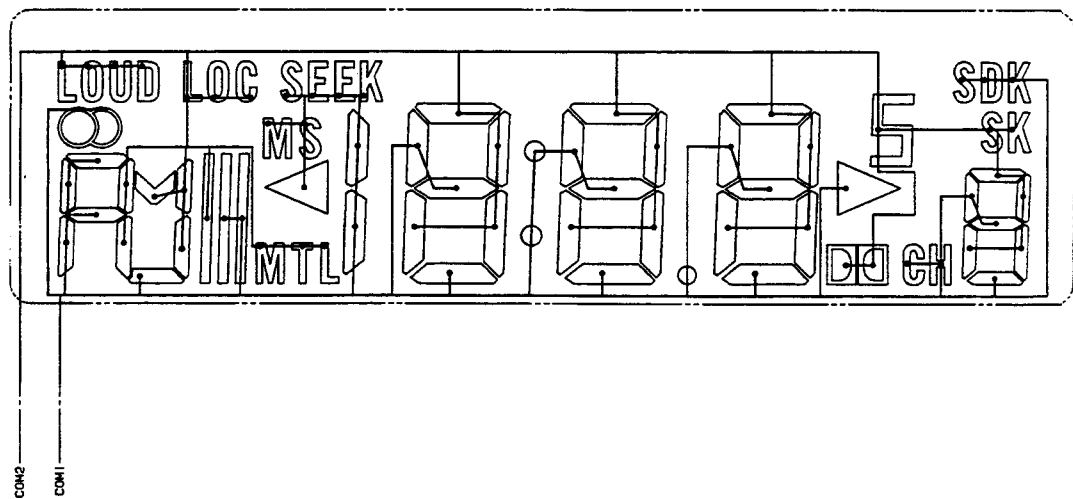


•LCD (CAW1202, CAW1191)

SEGMENT

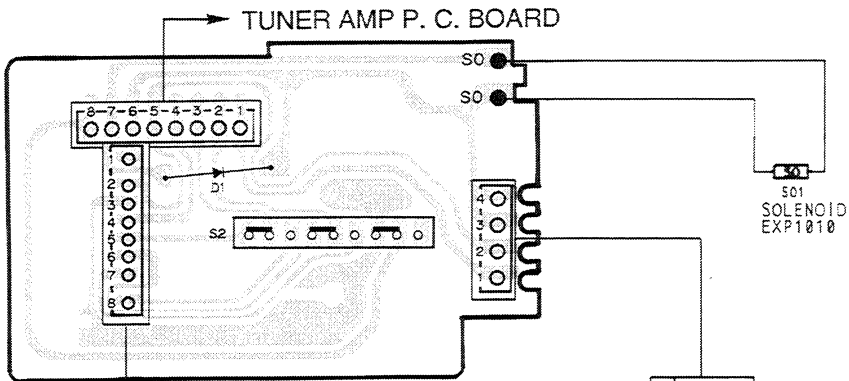


COMMON

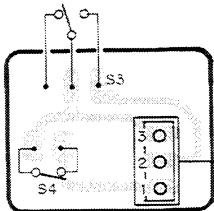


7. CONNECTION DIAGRAM (KEH-3500SDK/WG)

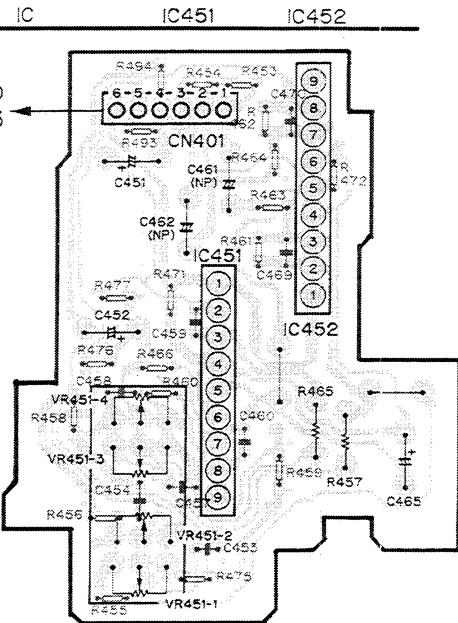
P. C. BOARD (A)



P. C. BOARD (B)

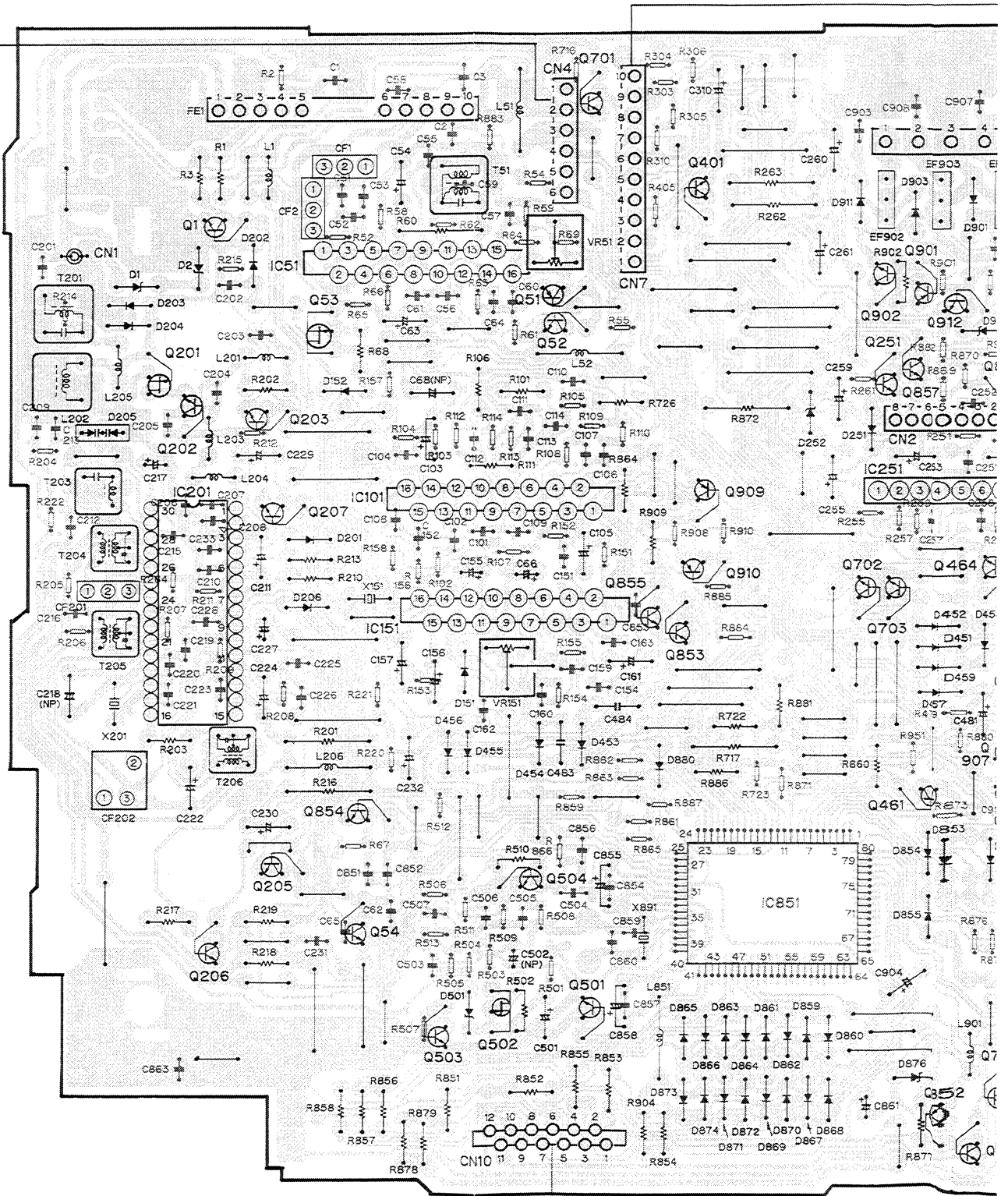


VOLUME P. C. BOARD



TUNER AMP P. C. BOARD

Q1	Q201	Q206	Q207	Q53	Q854	IC101	Q504	Q501	Q401	Q909	IC251	Q857	Q912
Q201	Q202	Q203	Q205	Q54	IC51	Q503	IC151	Q51	Q52	Q855	Q853	IC851	Q902
Q901	Q455	Q251	Q461	Q907	Q702	Q703	Q852	Q910	Q912	Q907	Q912	Q912	Q912
ADJ	T204	T205	T206	T51	VR151	VR51							

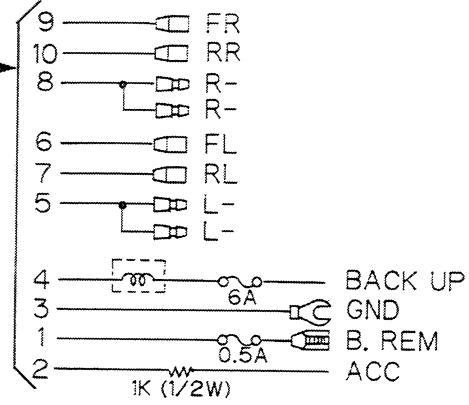
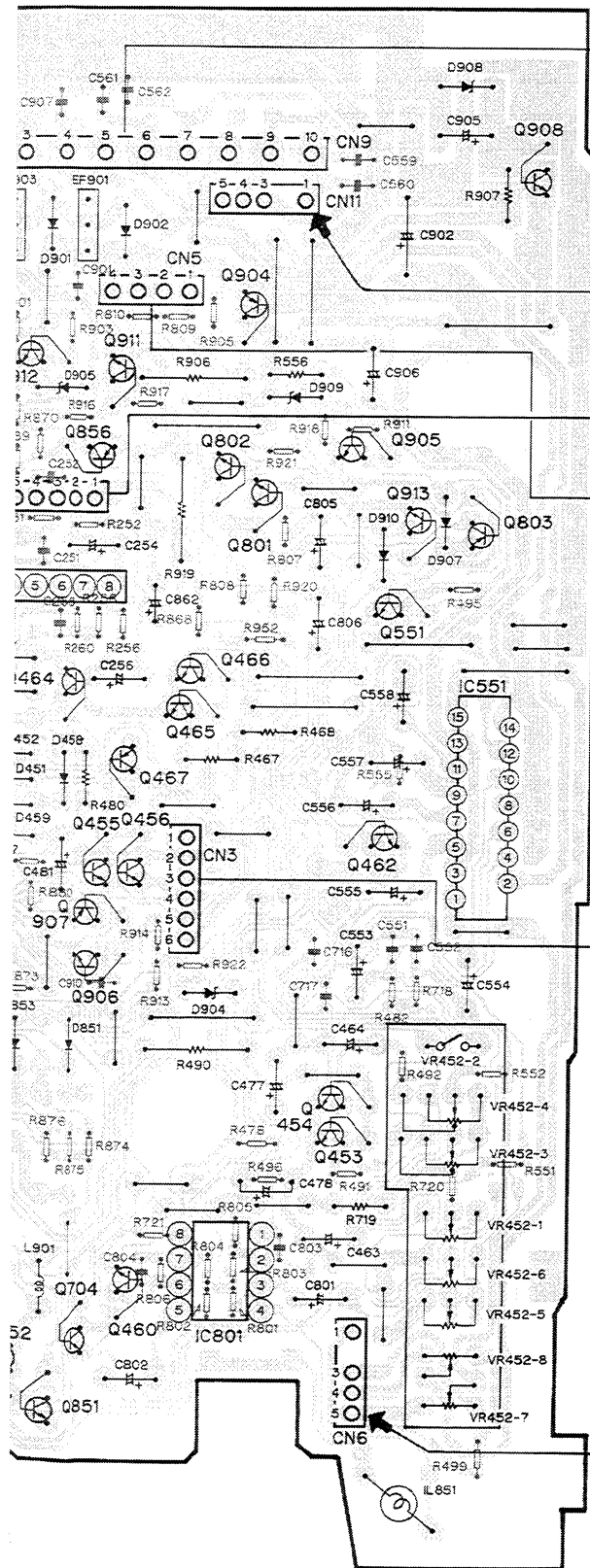


KEY BOARD UNIT

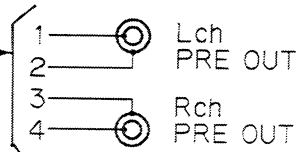
CN751

Q856
 Q912 Q464 Q911 IC801
 Q455 Q906 Q467 Q802 Q905 Q913
 Q907 Q704 Q456 Q466 Q904 Q454 Q551 Q803
 Q852 Q851 Q460 Q465 Q801 Q453 Q462 IC551 Q908

SUB P.C. BOARD CN301

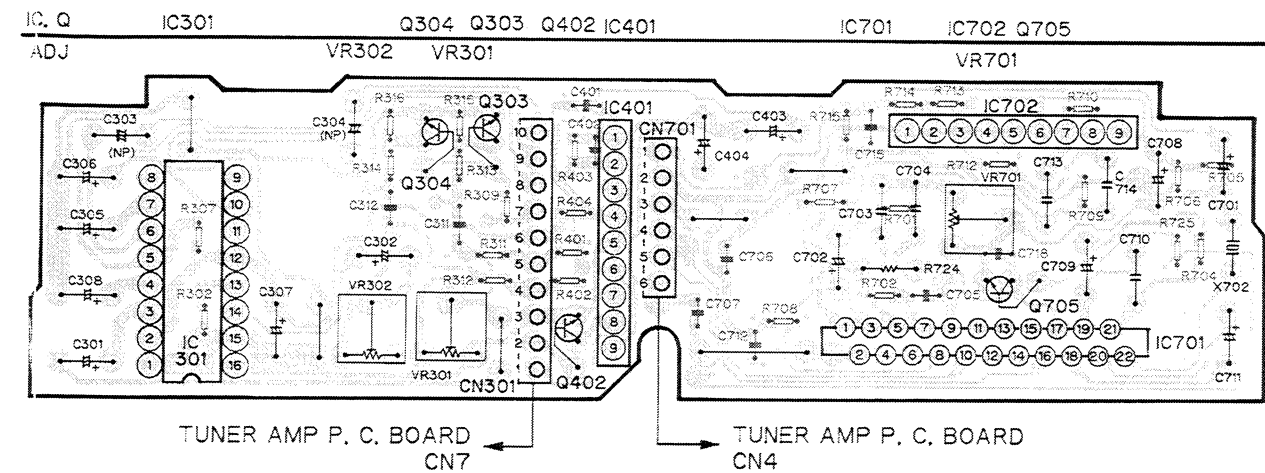


P. C. BOARD (A)



VOLUME P. C. BOARD
 CN401

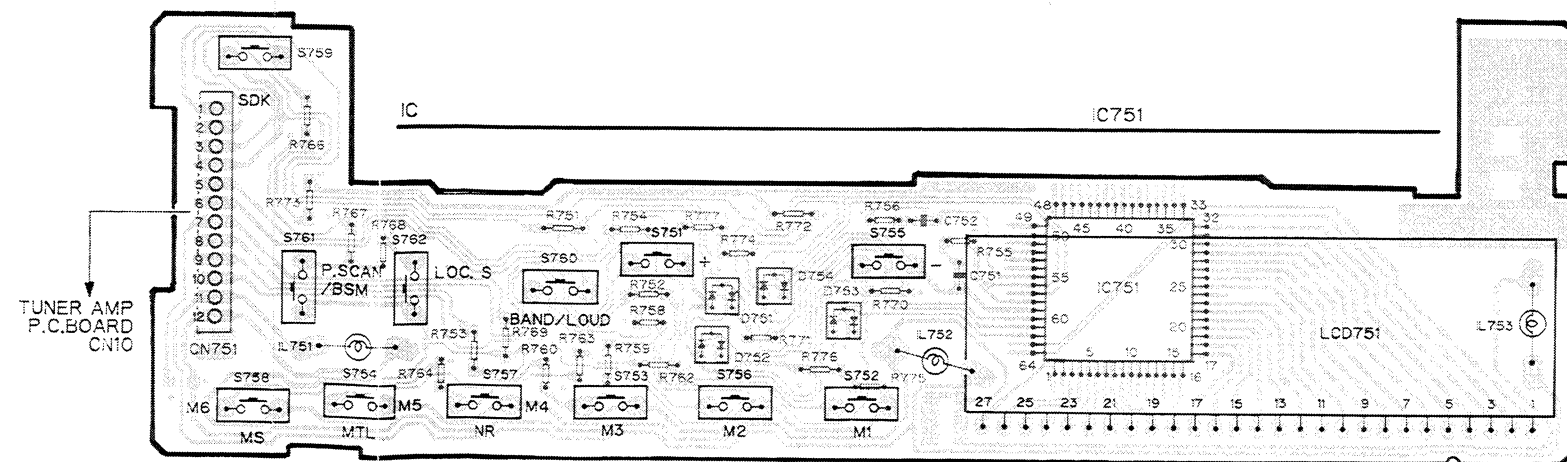
SUB P. C. BOARD



TUNER AMP P. C. BOARD
 CN7

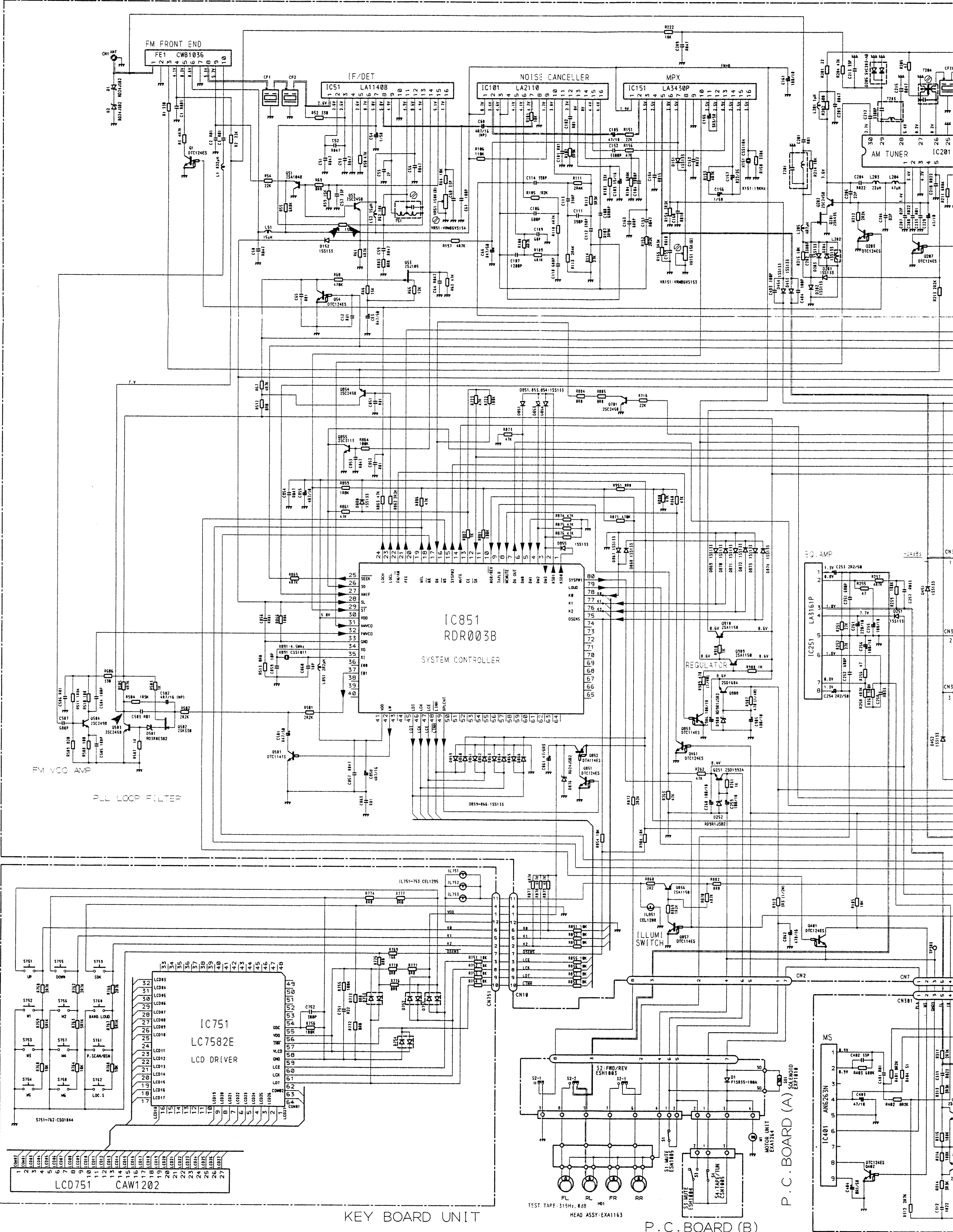
TUNER AMP P. C. BOARD
 CN4

KEY BOARD UNIT



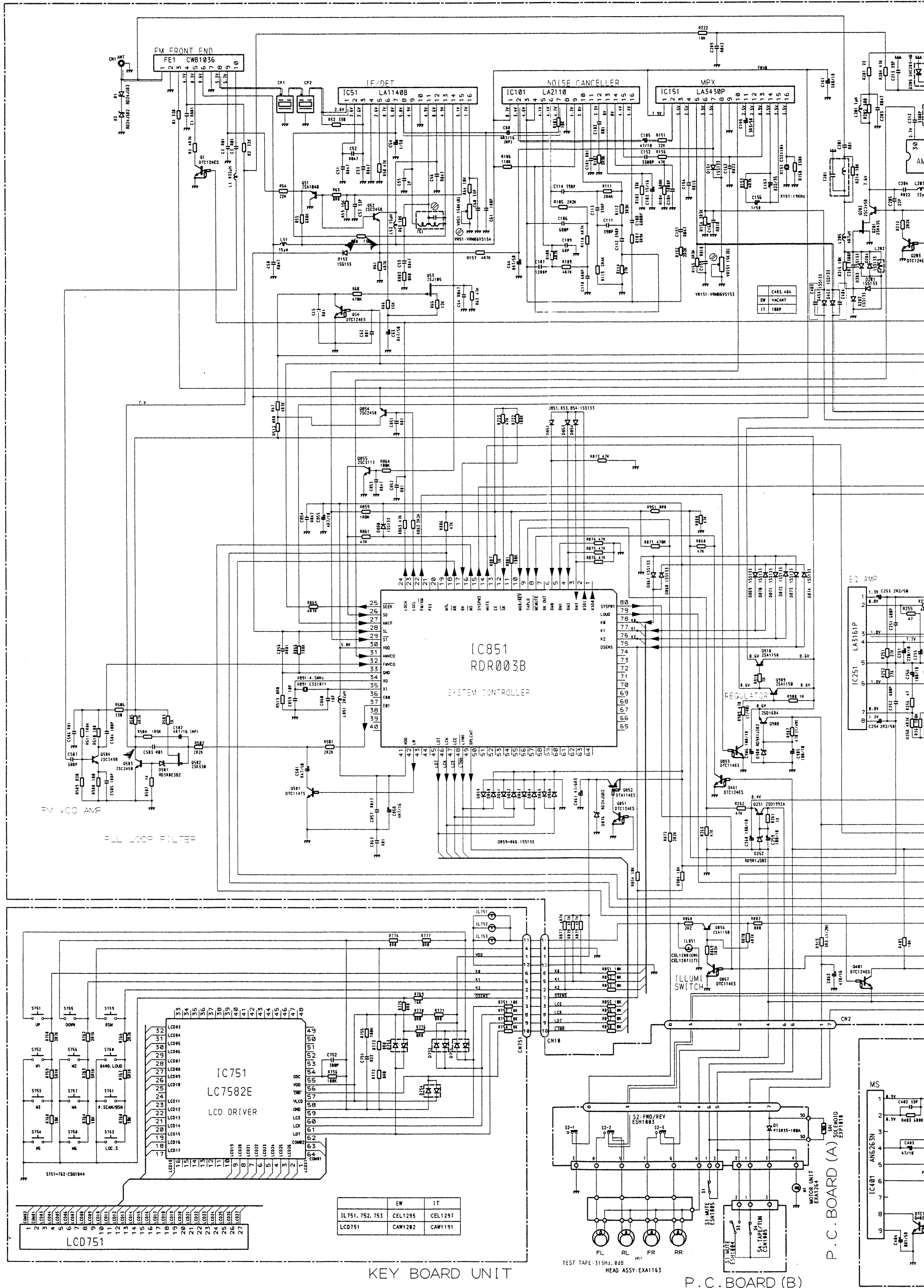
8. SCHEMATIC CIRCUIT DIAGRAM (KEH-3500SDK/WG)

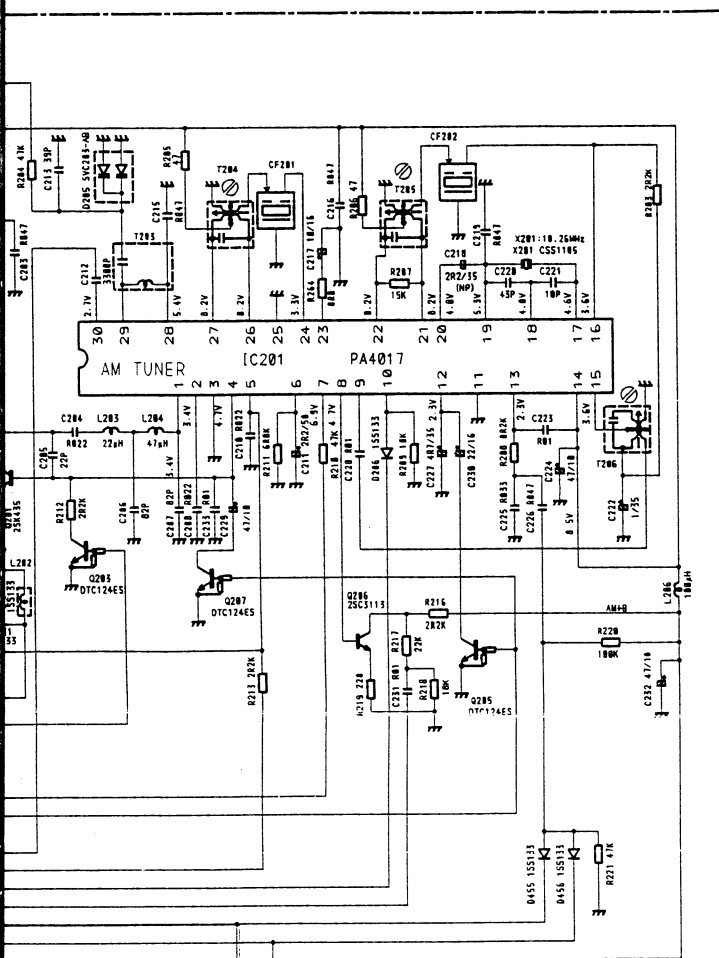
TUNER AMP P.C. BOARD



9. SCHEMATIC CIRCUIT DIAGRAM (KEH-3500/EW, IT)

TUNER AMP P.C. BOARD





NOTE:
 □ Symbol indicates a resistor.
 No differentiation is made between chip resistors and discrete resistors.
 □ Symbol indicates a capacitor.
 No differentiation is made between chip capacitors and discrete capacitors.
 Decimal points for resistor and capacitor fixed values are expressed as:
 2.2-2R2
 0.022-R022

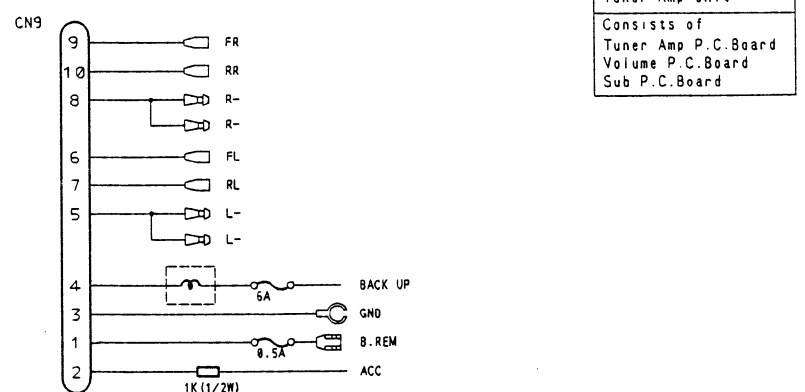
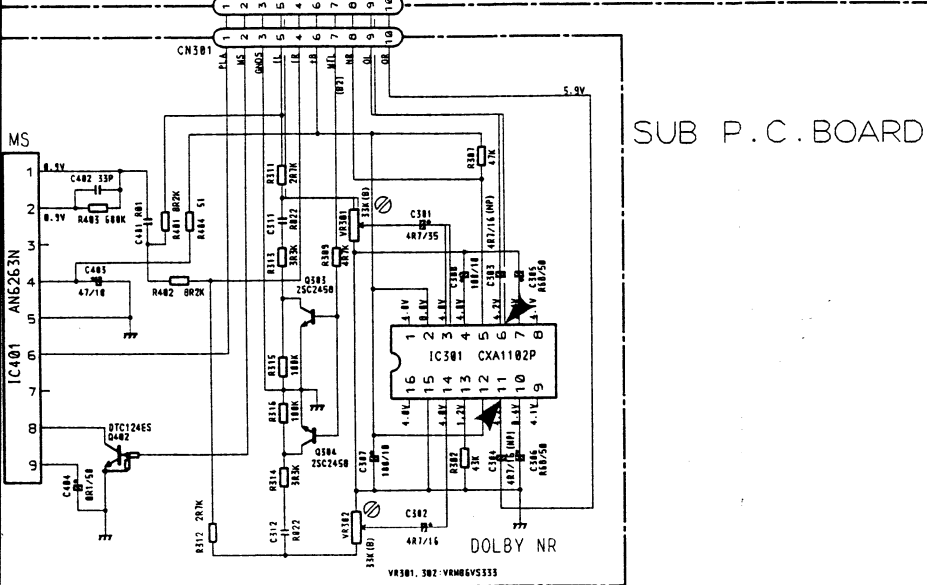
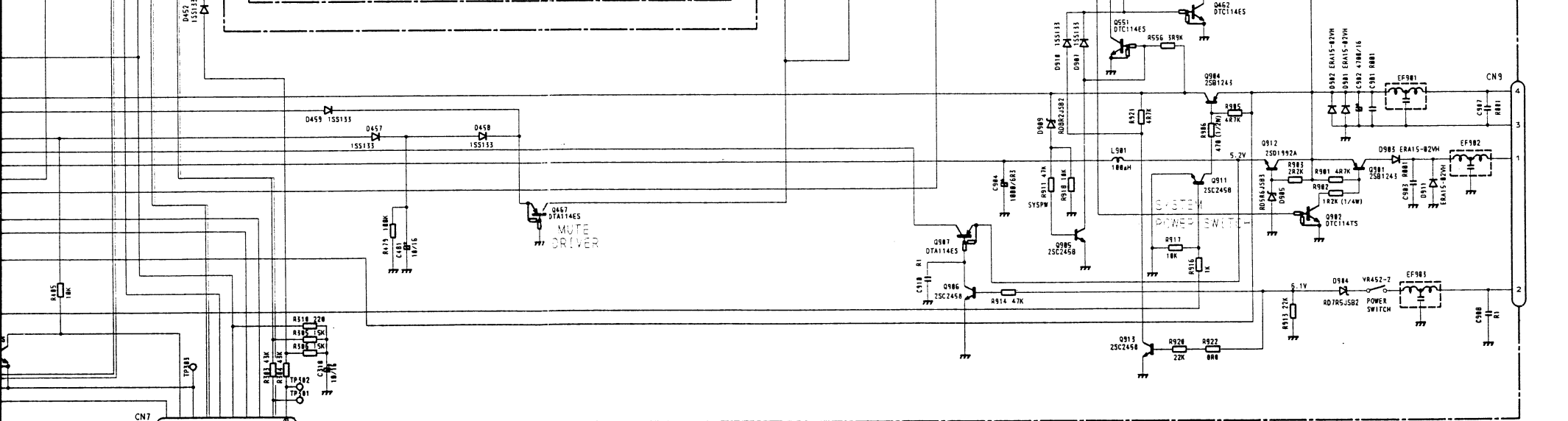
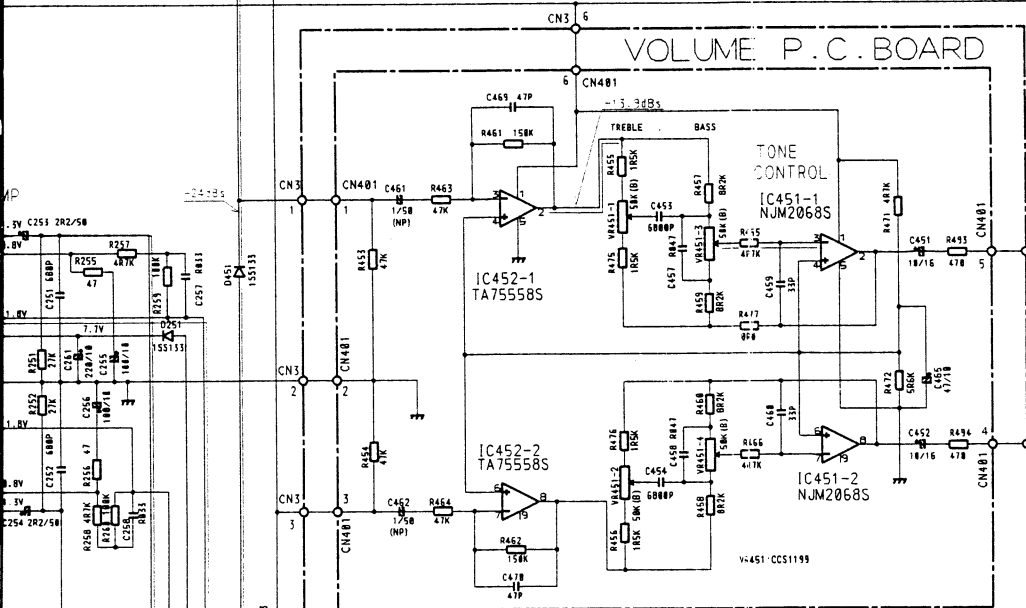


Fig. 13

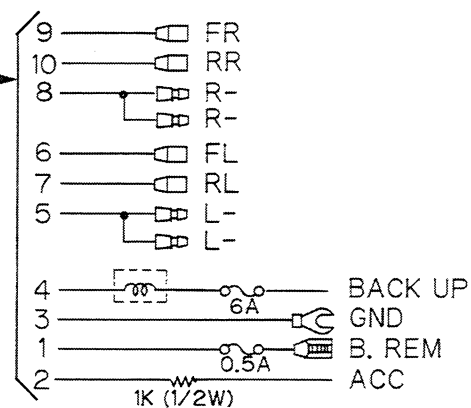
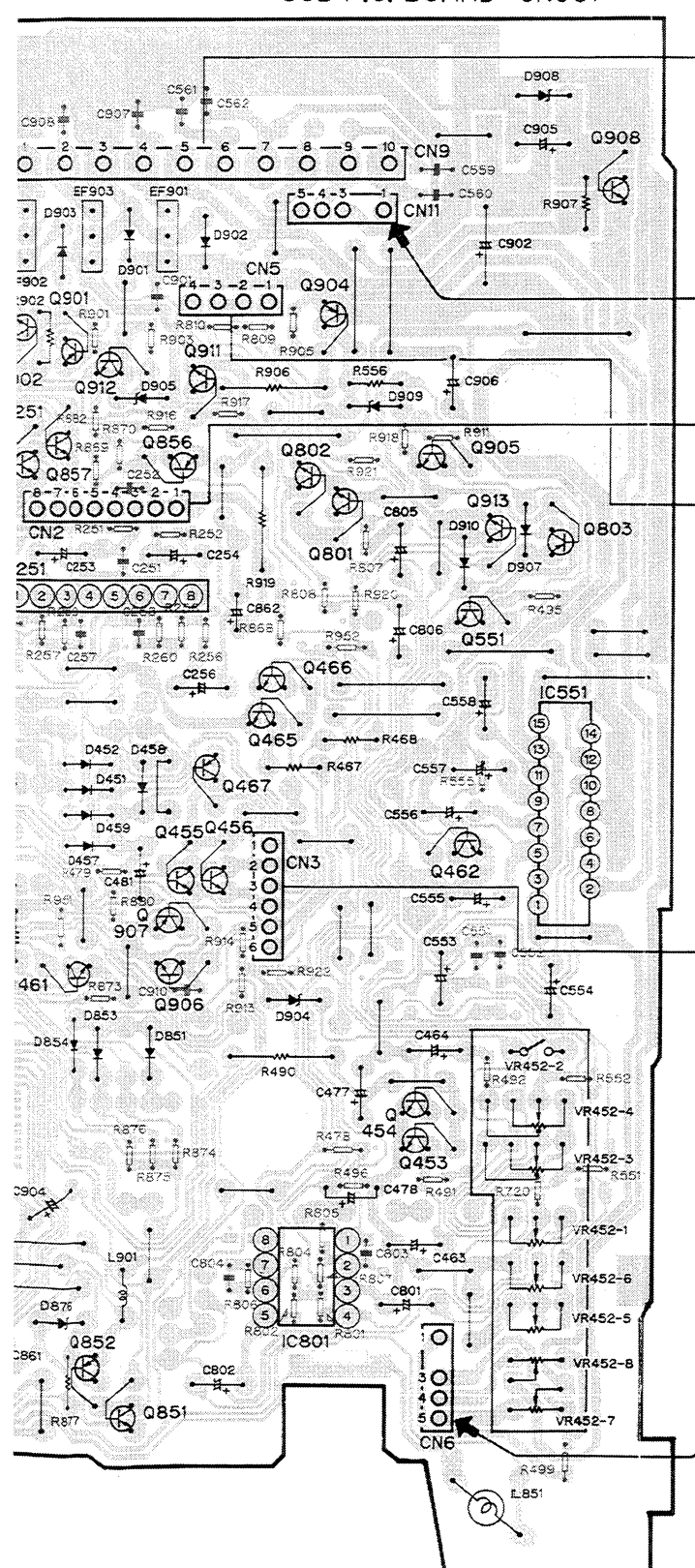
6

D

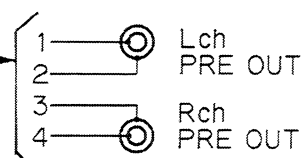


Q856
 51 Q857 Q912 Q911 IC801
 12 Q901 Q455 Q906 Q467 Q802 Q905 Q913
 51 Q461 Q907 Q456 Q466 Q904 Q454 Q551 Q803
 Q852 Q851 Q465 Q801 Q453 Q462 IC551 Q908

SUB P.C. BOARD CN301



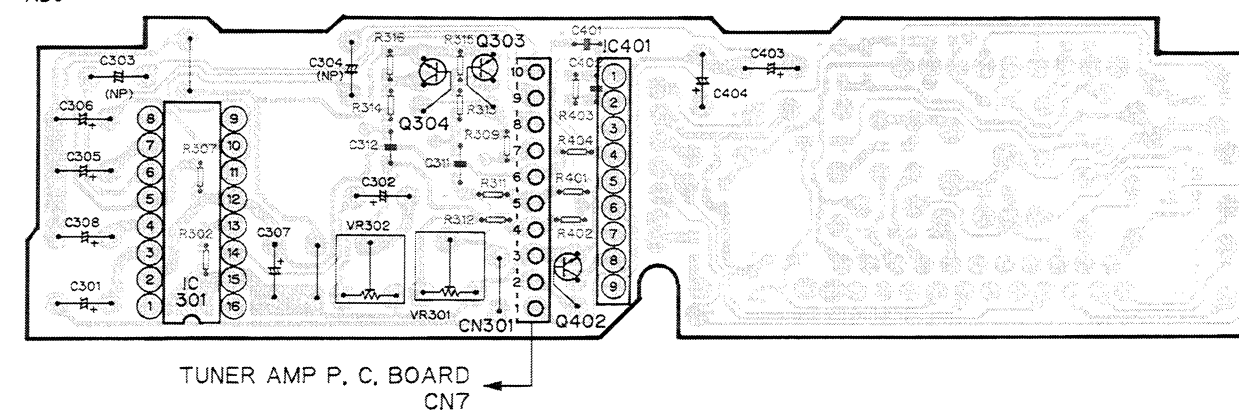
P. C. BOARD (A)



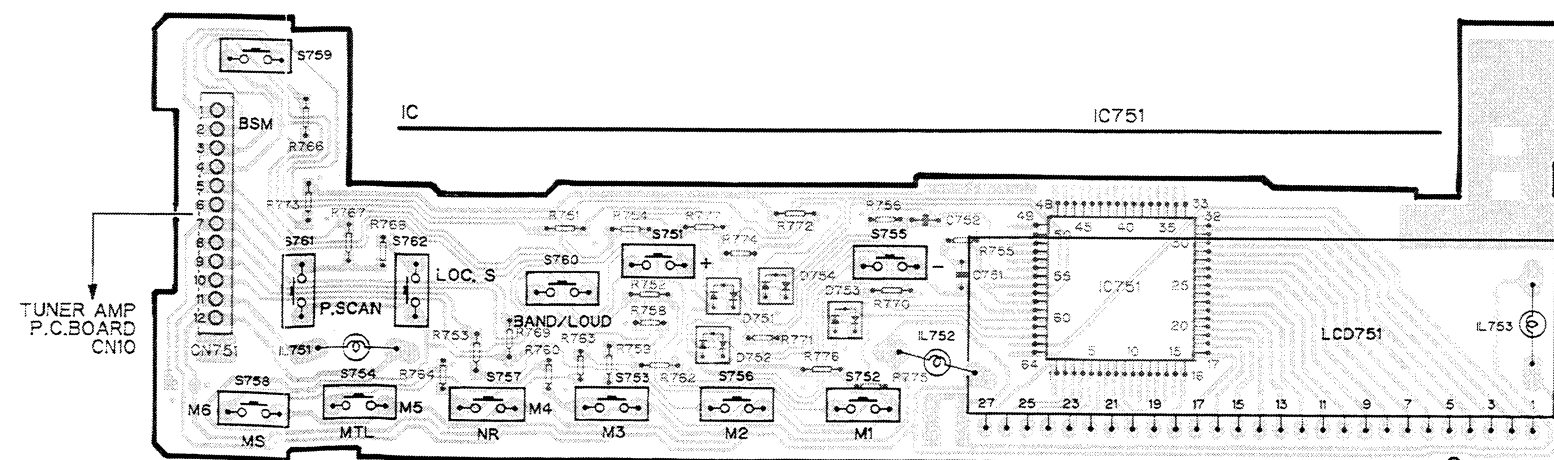
VOLUME P. C. BOARD CN401

SUB P. C. BOARD

IC. Q IC301 Q304 Q303 Q402 IC401
 ADJ VR302 VR301



KEY BOARD UNIT



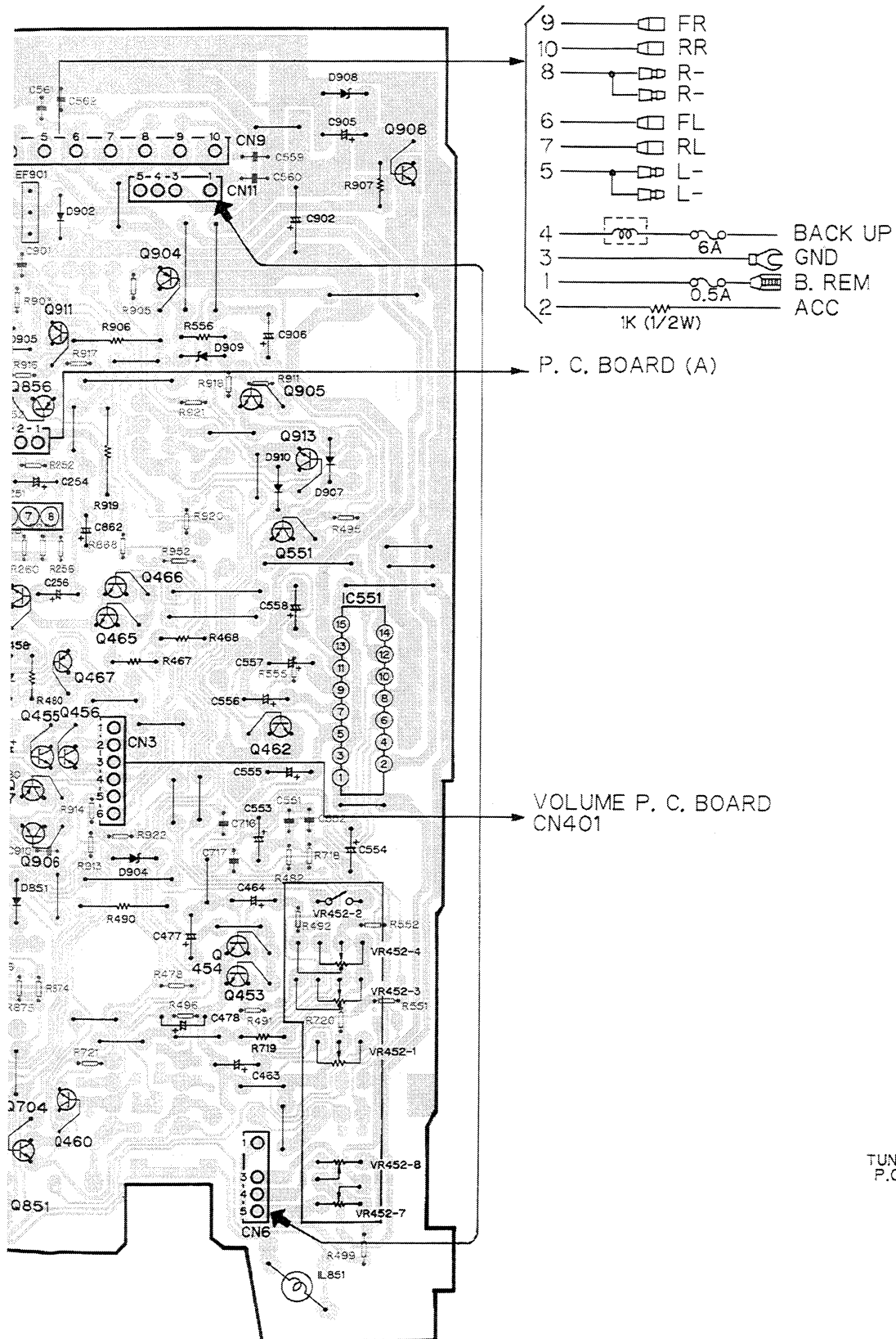
A

B

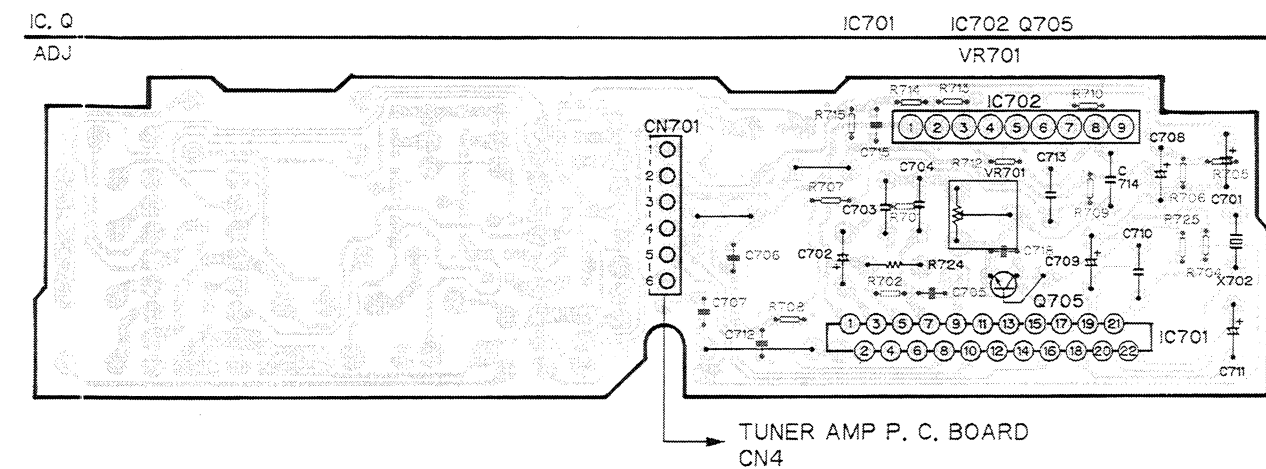
C

D

856
Q464 Q911
5 Q906 Q467 Q905 Q913
7 Q704 Q456 Q466 Q904 Q454 Q551
Q851 Q460 Q465 Q453 Q462 IC551 Q908



SUB P. C. BOARD



KEY BOARD UNIT

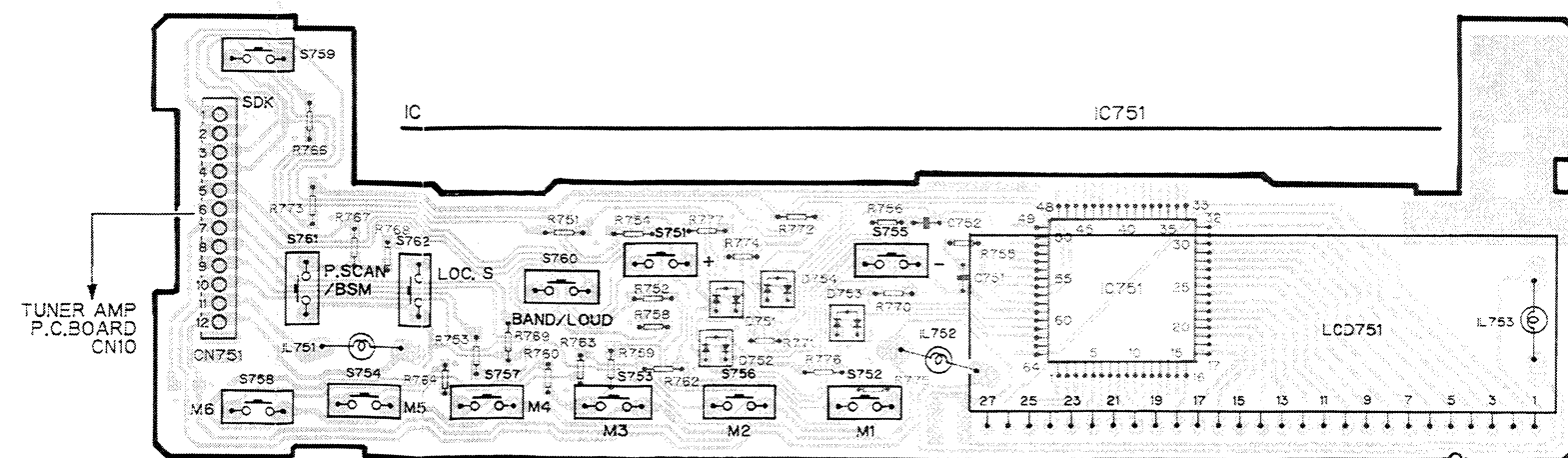


Fig. 15

TUNER AMP P.C. BOARD



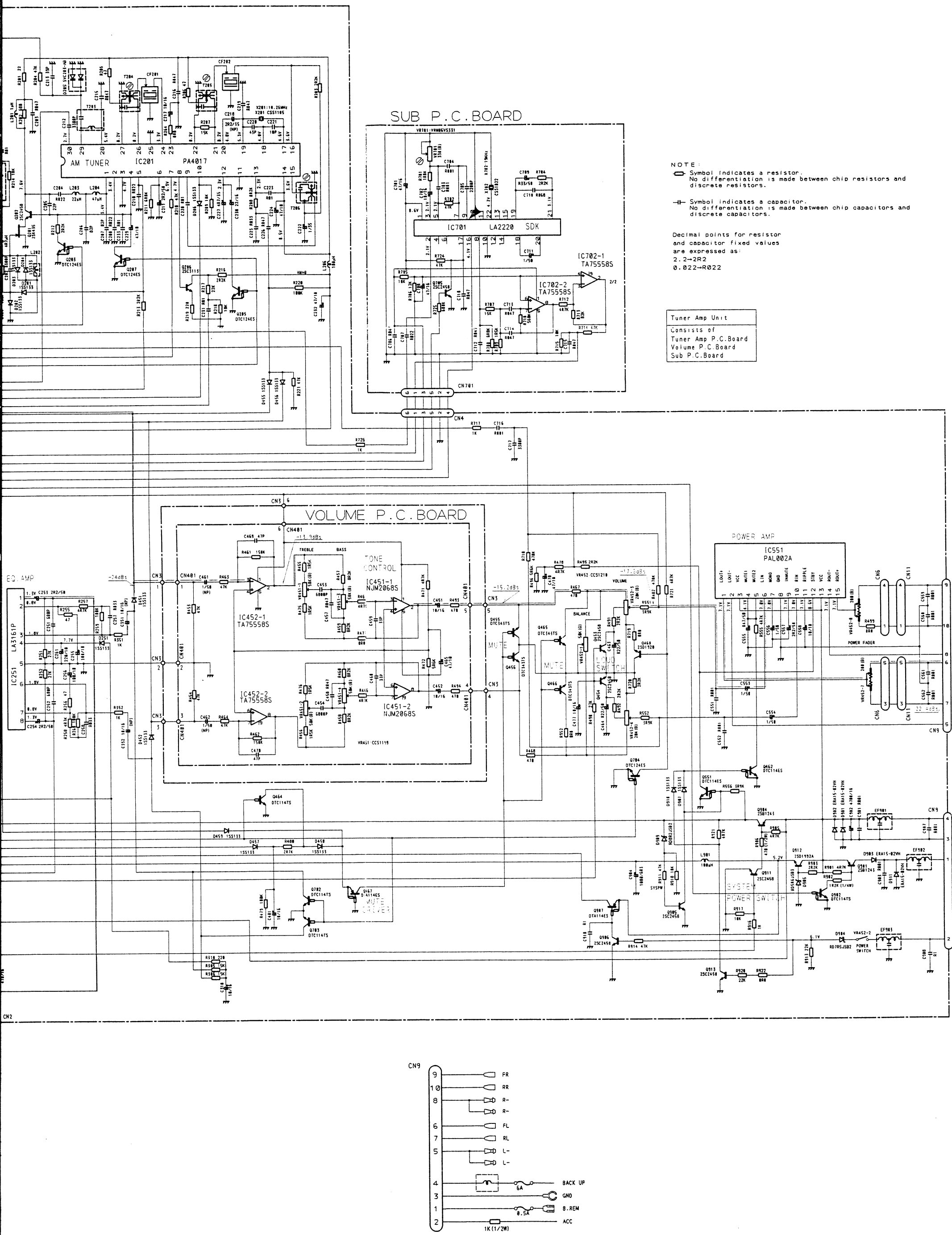


Fig. 16

13. SCHEMATIC CIRCUIT DIAGRAM (KEH-2500/EW, IT)

TUNER AMP P.C. BOARD

A

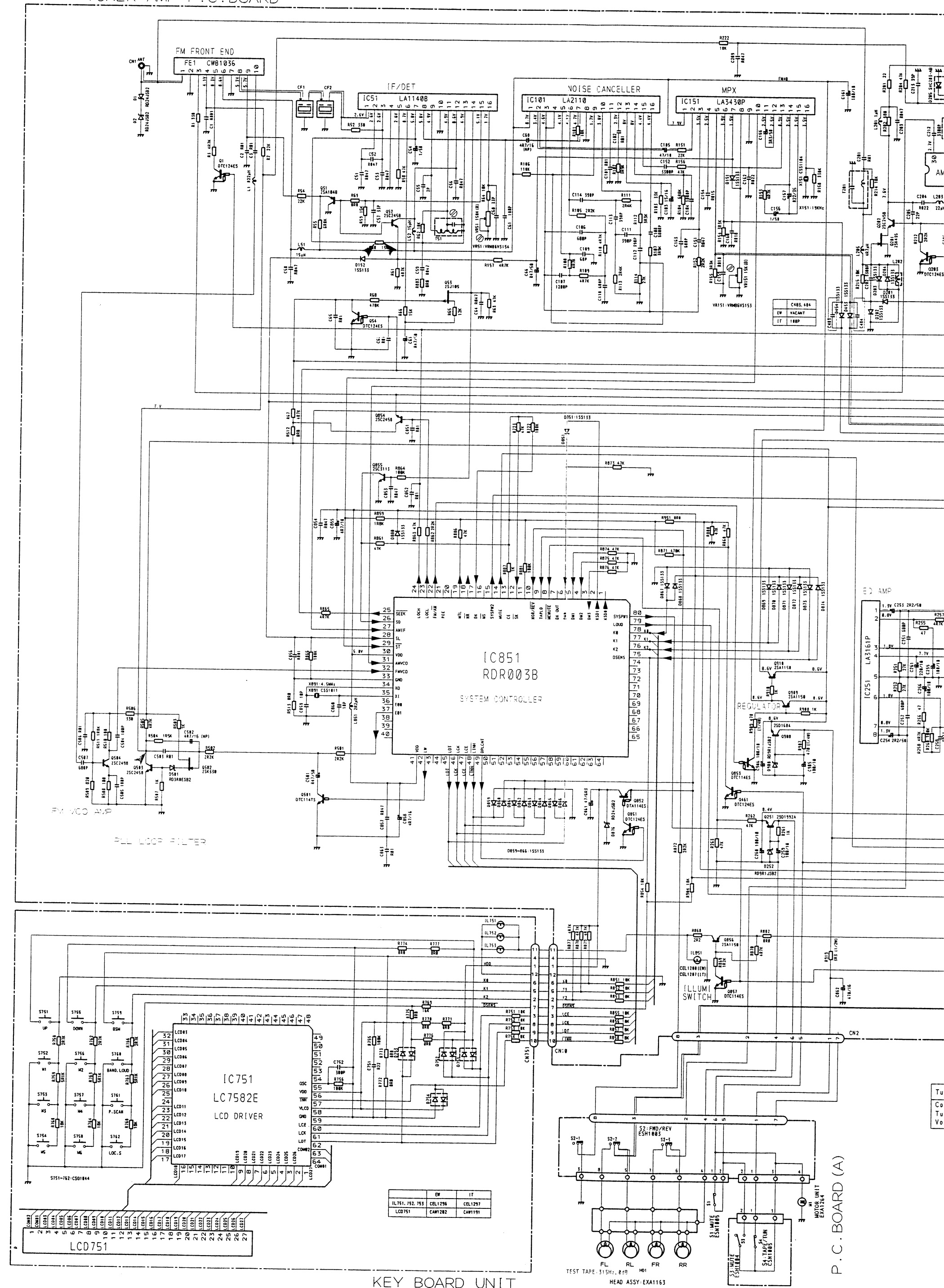
B

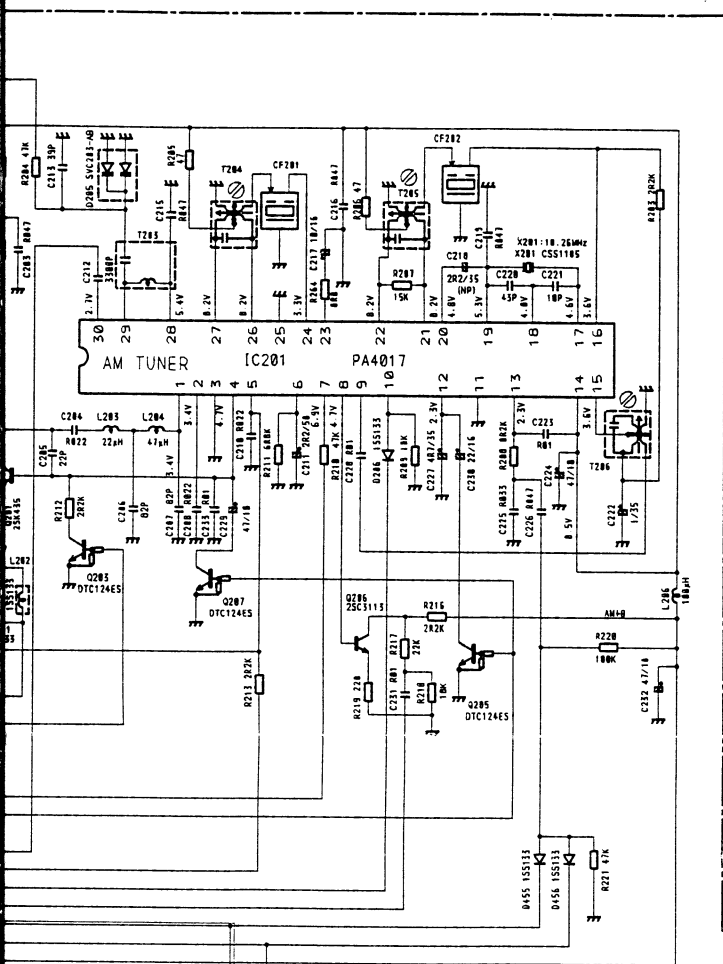
C

D

E

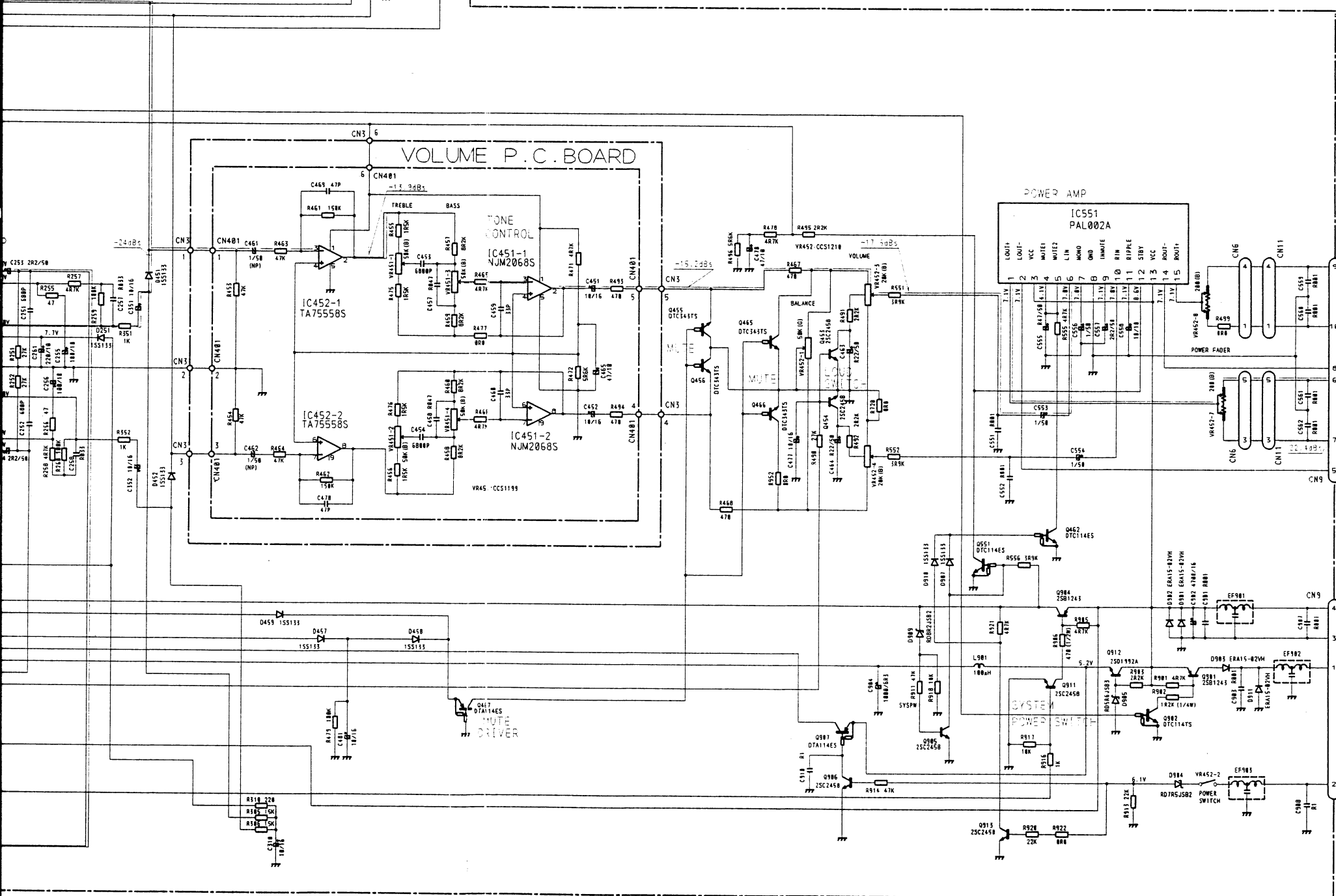
F





NOTE:
 □ Symbol indicates a resistor.
 No differentiation is made between chip resistors and discrete resistors.
 ▭ Symbol indicates a capacitor.
 No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
 2.2-2R2
 0.022-R022



Tuner Amp Unit
 Consists of
 Tuner Amp P.C. Board
 Volume P.C. Board

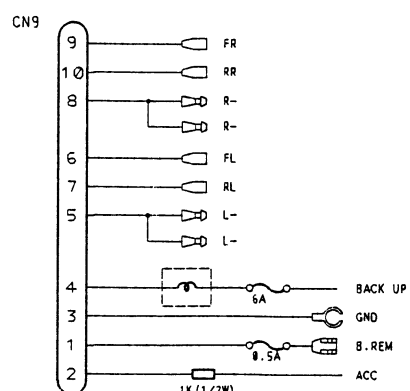
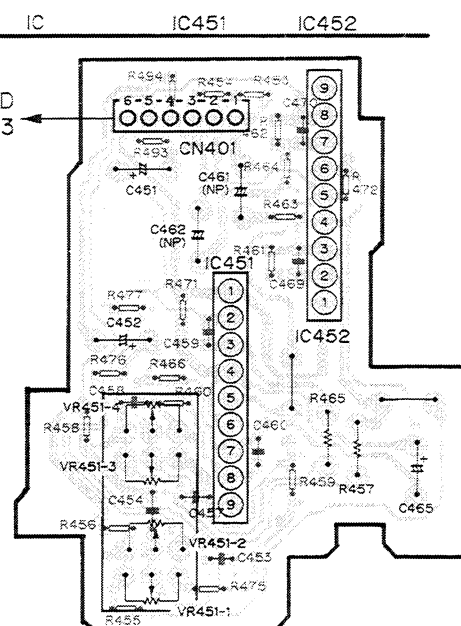
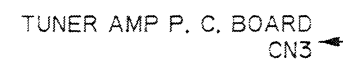
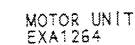
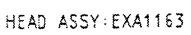
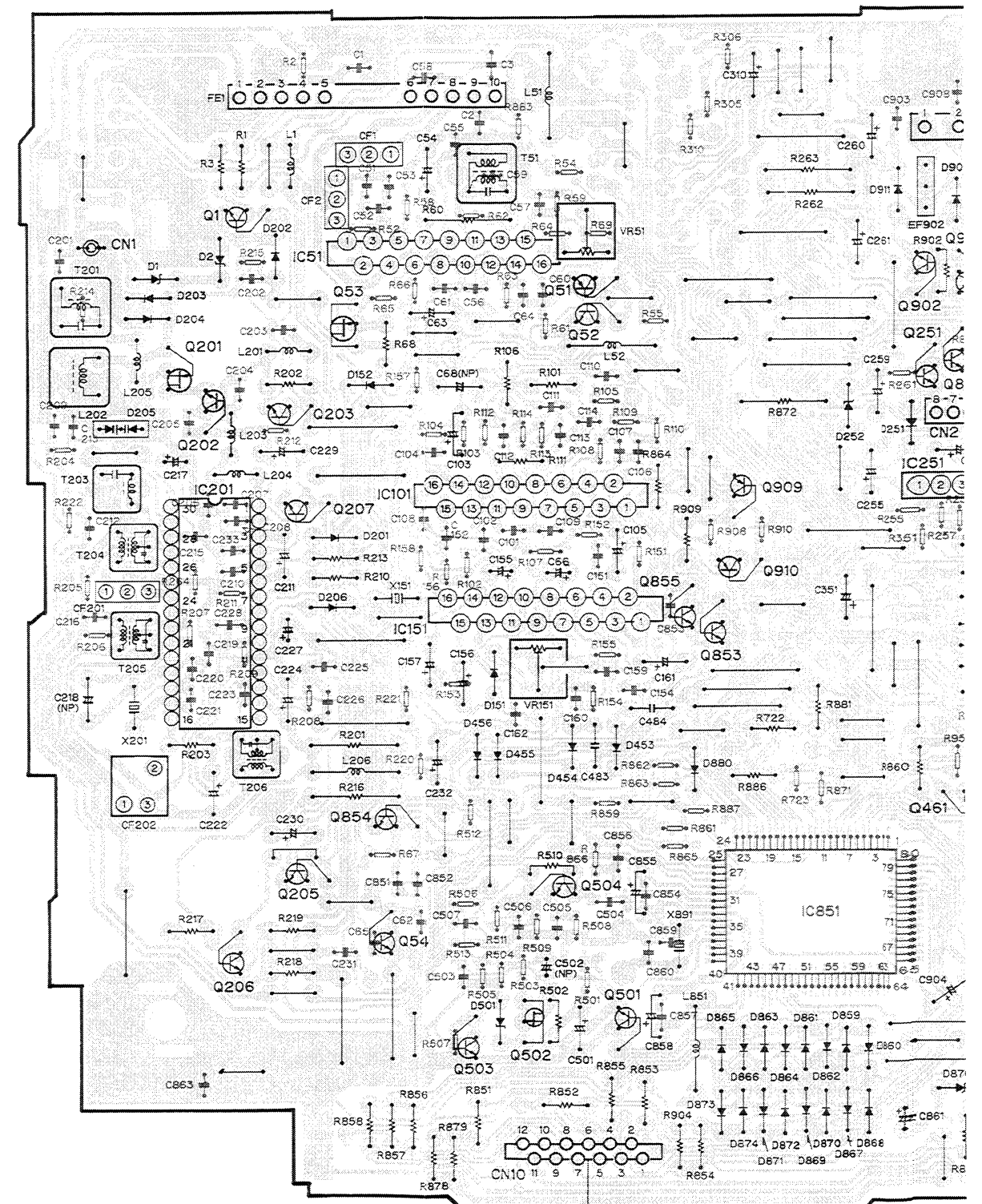


Fig. 17

6

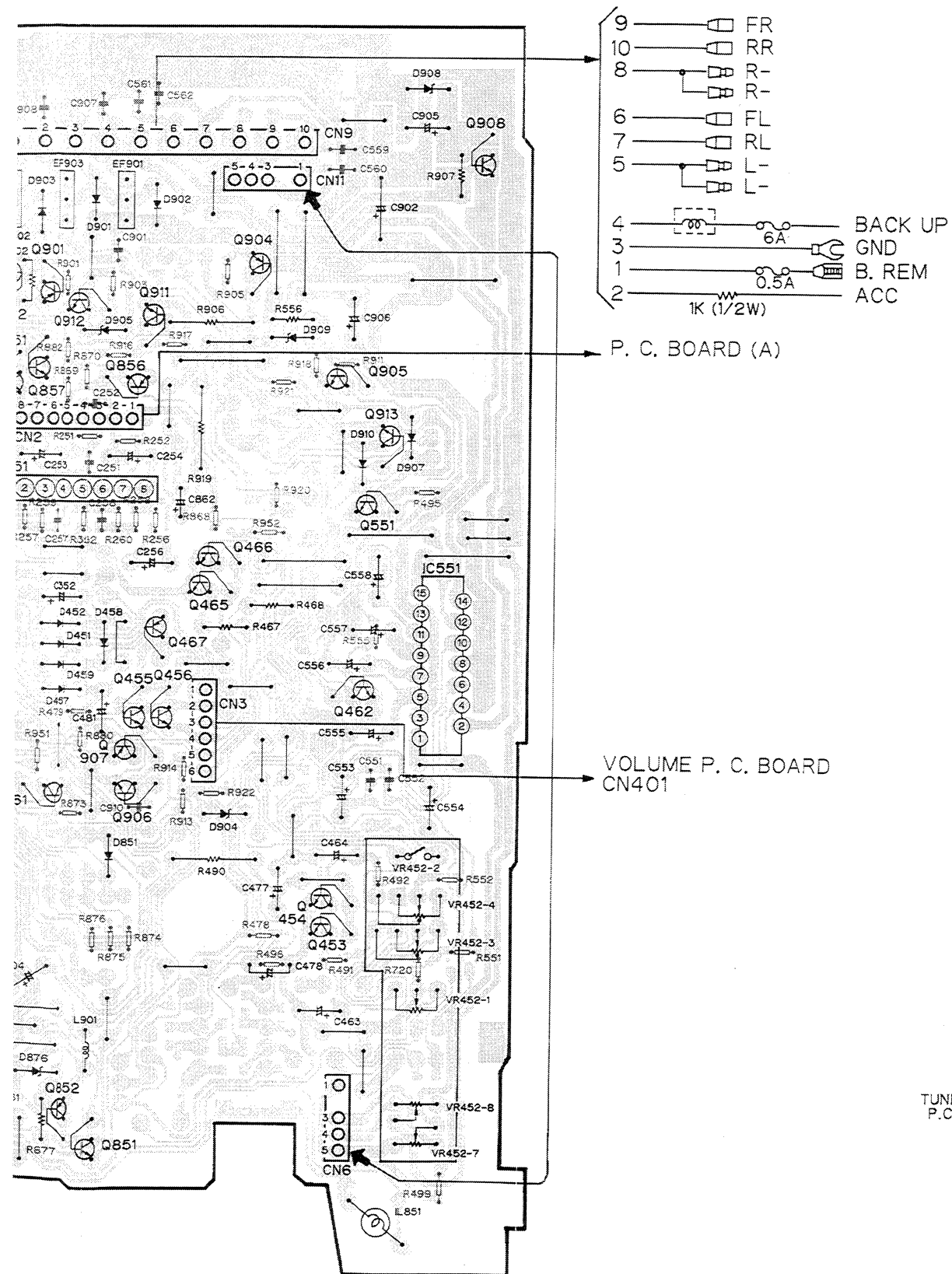


1C. Q

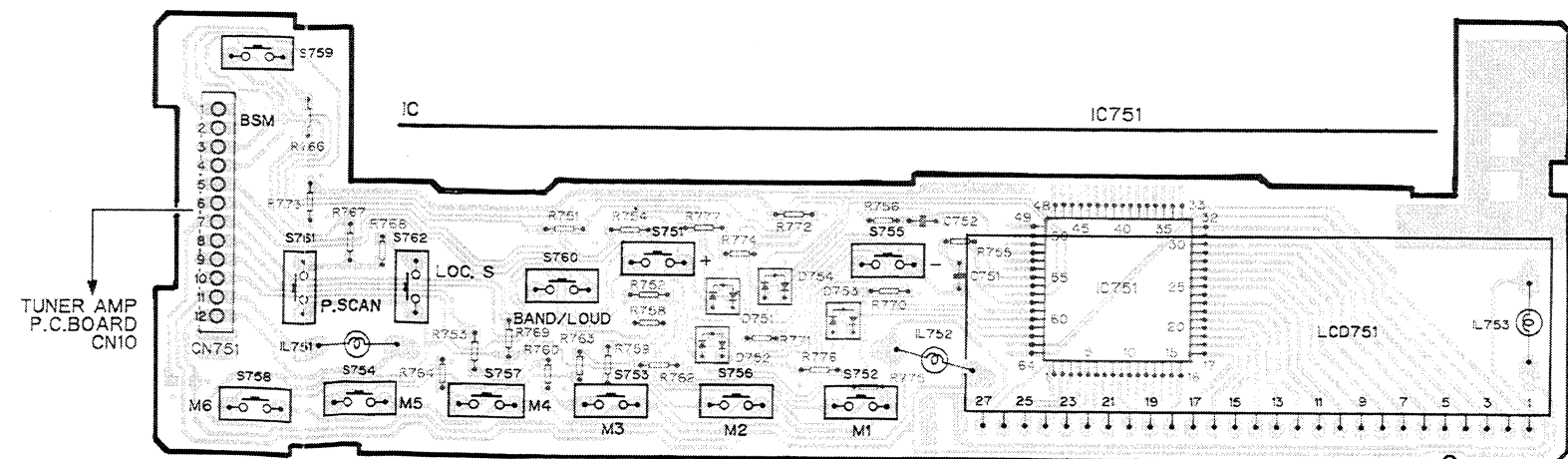
ADJ.

48

Q856
 1 Q857 Q912 Q911
 2 Q901 Q455 Q906 Q467 Q905 Q913
 1 Q461 Q907 Q456 Q466 Q904 Q454 Q551
 Q852 Q851 Q465 Q453 Q462 IC551 Q908



KEY BOARD UNIT



15. EXPLODED VIEW

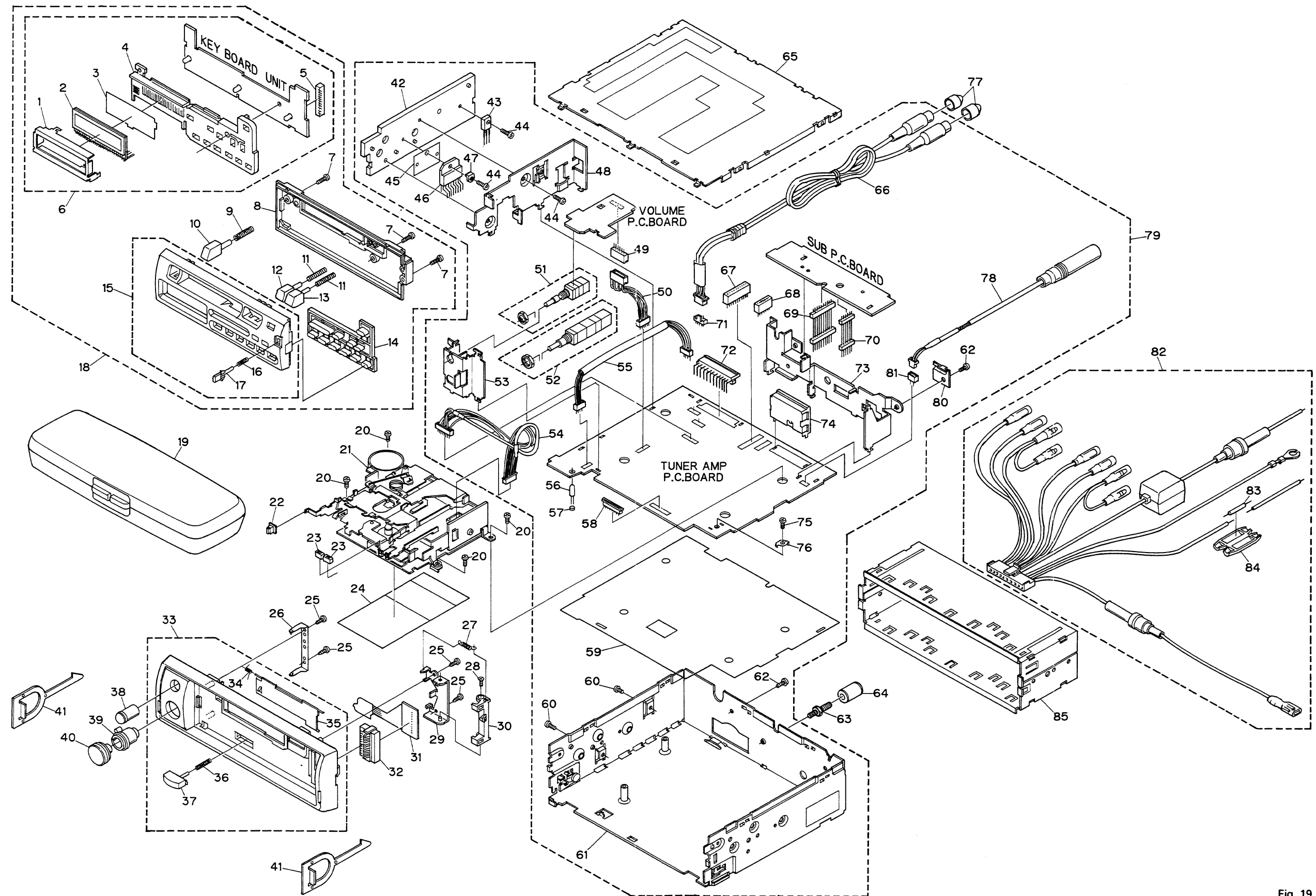


Fig. 19

NOTES:

- Parts marked by “*” or “*” are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by “⊙” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

• Parts List (KEH-3500SDK/WG)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Holder	CNC4533	35	Door	CAT1451
2	LCD	CAW1202	36	Spring	CBH1470
3	Plate	CNM3641	37	Button	CAC3049
4	Lens	CNV3263	38	Knob	CAA1305
5	Plug	CKS2402	39	Knob	CAA1301
⊙ 6	Key Board Unit	CWM3258	40	Knob	CAA1234
7	Screw	BPZ20P100FZK	41	Handle	CNC1631
8	Cover	CNS2526	* 42	Heat Sink	CNC4417
9	Spring	CBH1455	43	Transistor (Q908)	2SD1684
10	Button (EJECT)	CAC3218	44	Screw	BMZ30P080FMC
11	Spring	CBH1388	45	Spacer	CNM3559
12	Button	CAC3112	46	IC (IC551)	PAL002A
13	Button	CAC3219	47	Bush	CNV3321
14	Button	CAC3330	* 48	Holder	CNC4419
15	Grille Unit	CXA5272	49	Plug	CKS1039
16	Spring	CBH1478	50	Connector	CDE3802
17	Button	CAC3331	51	Volume (VR451)	CCS1199
18	Detach Grille Assy	CXA5046	52	Volume (VR452)	CCS1209
19	Case Assy	CXA5331	* 53	Holder	CNC4418
20	Screw	BMZ26P050FMC	54	Connector	CDE3804
⊙ 21	Cassette Mechanism Assy	EXK1726	55	Connector	CDE3803
22	Button	CAC2819	56	Lamp (IL851)	CEL1208
23	Button	CAC2820	57	Spacer	CNW-662
* 24	Insulator	CNM3639	58	Connector	CKS1260
25	Screw	CBA1202	* 59	Insulator	CNM3469
26	Holder Unit	CXA3998	60	Screw	BSZ30P100FMC
27	Spring	CBH1477	* 61	Chassis Unit	CXA5037
28	Screw	CBA1215	62	Screw	BSZ30P050FMC
29	Holder Unit	CXA5074	63	Screw	CBA1002
30	Arm	CNV3266	64	Bush	CNV1009
31	P.C. Board	CNP3117	65	Case	CNB1648
32	Socket	CKS2396	66	Connector	CDE3897
33	Panel Unit	CXA5059	* 67	Plug	CKS1486
34	Spring	CBH1215	* 68	Plug	CKS1482
			69	Plug	CKS2492

Mark No.	Description	Part No.	Mark No.	Description	Part No.
70	Plug	CKS2397	* 80	Holder	CNC3940
* 71	Plug	CKS1733	* 81	Plug	CKS1222
72	Plug	CKS-467	82	Cord Assy	CDE3737
* 73	Holder	CNC4420	83	Resistor	RS1/2P102JL
74	FM Front End (FE1)	CWB1036	84	Cap	CNS1472
75	Screw	BSZ30P055FUC	85	Holder	CNC1484
* 76	Holder	CNC2218			
77	Cap	CNV2680			
78	Antenna Cable	CDH1115			
⊙ 79	Tuner Amp Assy	CWM3256			

- The KEH-3500/EW and KEH-3500/IT Parts Lists enumerate the parts which differ from those enumerated in the KEH-3500SDK/WG Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-3500SDK/WG Parts List is given on page 53.

	KEH-3500SDK /WG	KEH-3500/EW	KEH-3500/IT
Mark No. Description	Part No.	Part No.	Part No.
2 LCD	CAW1202	CAW1202	CAW1191
⊙ 6 Key Board Unit	CWM3258	CWM3258	CWM3261
15 Grille Unit	CXA5272	CXA5273	CXA5273
18 Detach Grille Assy	CXA5046	CXA5064	CXA5048
56 Lamp (IL851)	CEL1208	CEL1208	CEL1207
* 61 Chassis Unit	CXA5037	CXA5038	CXA5038
* 68 Plug	CKS1482	.....	.....
70 Plug	CKS2397	.....	.....
⊙ 79 Tuner Amp Assy	CWM3256	CWM3254	CWM3259
82 Cord Assy	CDE3737	CDE3505	CDE3505

- The KEH-2500SDK/WG, KEH-2500/EW, KEH-2500/X1B/EW, KEH-2500/IT and KEH-2500/X1B/IT Parts Lists enumerate the parts which differ from those enumerated in the KEH-3500SDK/WG Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.
The KEH-3500SDK/WG Parts List is given on page 53.

Mark No. Description	KEH-3500SDK /WG	KEH-2500SDK /WG	KEH-2500/EW KEH-2500/X1B/EW	KEH-2500/IT KEH-2500/X1B/IT
	Part No.	Part No.	Part No.	Part No.
2 LCD	CAW1202	CAW1202	CAW1202	CAW1191
◎ 6 Key Board Unit	CWM3258	CWM3258	CWM3258	CWM3261
15 Grille Unit	CXA5272	CXA5276	CXA5277	CXA5277
18 Detach Grille Assy	CXA5046	CXA5067	CXA5066	CXA5068
◎ 21 Cassette Mechanism Assy	EXK1726	EXK1716	EXK1716	EXK1716
52 Volume(VR452)	CCS1209	CCS1210	CCS1210	CCS1210
54 Connector	CDE3804	CDE3805	CDE3805	CDE3805
56 Lamp(IL851)	CEL1208	CEL1208	CEL1208	CEL1207
* 61 Chassis Unit	CXA5037	CXA5365	CXA5038	CXA5038
66 Connector	CDE3897	.....	.....	.....
* 67 Plug	CKS1486	.....	.....	.....
* 68 Plug	CKS1482	CKS1482	.....	.....
69 Plug	CKS2492	.....	.....	.....
70 Plug	CKS2397	CKS2397	.....	.....
* 71 Plug	CKS1733	.....	.....	.....
77 Cap	CNV2680	.....	.....	.....
◎ 79 Tuner Amp Assy	CWM3256	CWM3269	CWM3267	CWM3271
82 Cord Assy	CDE3737	CDE3737	CDE3505	CDE3505

16. CASSETTE MECHANISM ASSY EXPLODED VIEW (KEH-3500SDK, KEH-3500)

•Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Reel Unit	EXA1251	41	Spring	EBH1363
2	Gear Unit	EXA1206	42	Motor Unit	EXA1264
3	Washer	CBF1037	43	Screw	PMS26P025FUC
4	.....		44	Screw	CBA1054
5	Gear	ENV1372	45	Gathering P.C. Board	ENX1005
6	Gear	ENV1344	46	Switch	ESH1004
7	Gear	ENV1374	47	Switch	CSN1005
8	Gear	ENV1373	48	Screw	CBA1025
9	Sub Chassis Unit	EXA1261	49	Gear	ENV1267
10	Arm	ENV1210	50	.....
11	Screw	BMZ20P025FMC	51	.....
12	Spring	EBH1381	52	Gear	ENV1343
13	.....		53	Arm Unit	EXA1155
14	.....		54	Washer	YE30FUC
15	Shaft	ELA1266	55	Spring	EBH1310
16	Lever	ENC1275	56	Flywheel Unit	EXA1257
17	Washer	EBF1015	57	Belt	ENT1018
18	Gear	ENV1342	58	Arm	ENV1206
19	Spring	EBH1361	59	Spring	EBH1317
20	Spring	EBH1362	60	Gear	ENV1371
21	Lever	ENC1302	61	Chassis Unit	EXA1267
22	Spring	EBH1359	62	Screw	JFZ20P025FNI
23	Washer	YE25FUC	63	Bracket	ENC1341
24	Spring	EBH1358	64	Pulley	ENV1291
25	.....		65	Solenoid	EXP1010
26	Lever	ENC1256	66	Screw	EBA1023
27	Spring	EBH1373	67	Plug	CKS1055
28	Arm	ENC1248	68	Gathering P.C. Board	ENX1004
29	Spring	EBH1308	69	Switch	ESH1003
30	Washer	YE15FUC	70	Washer	WH23FMC
31	Arm Unit	EXA1198	71	Screw	BSZ23P050FMC
32	Spring	EBH1374	72	Screw	EBA1028
33	Frame	ENC1204	73	Head Unit	EXA1163
34	Arm	ENC1263	74	P.C. Board	ENP1042
35	.....		75	Switch	ESN1005
36	Holder	ENC1257	76	Washer	YE20FUC
37	Spring	EBH1364	77	Pinch Roller Unit	EXA1194
38	Lever	ENV1287	78	Washer	YE12FUC
39	Head Base Unit	EXA1271	79	Roller	ELA1250
40	.....		80	Arm Unit	EXA1166

•Cassette Mechanism (1M Mechanism)

Mark No.	Description	Part No.
81	Screw	CBA1038
82	Arm	ENV1370
83	Spring	EBH1368
84	Arm	ENC1340
85	Spring	EBH1322
86	Lever	ENC1246
87	Spring	EBH1365
88	Lever	ENC1247
89	Arm Unit	EXA1158
90	Pinch Roller Unit	EXA1269
91	Spring	EBH1375
92	Arm Unit	EXA1157
93	Spring	EBH1345
94	Cord	EDD1010

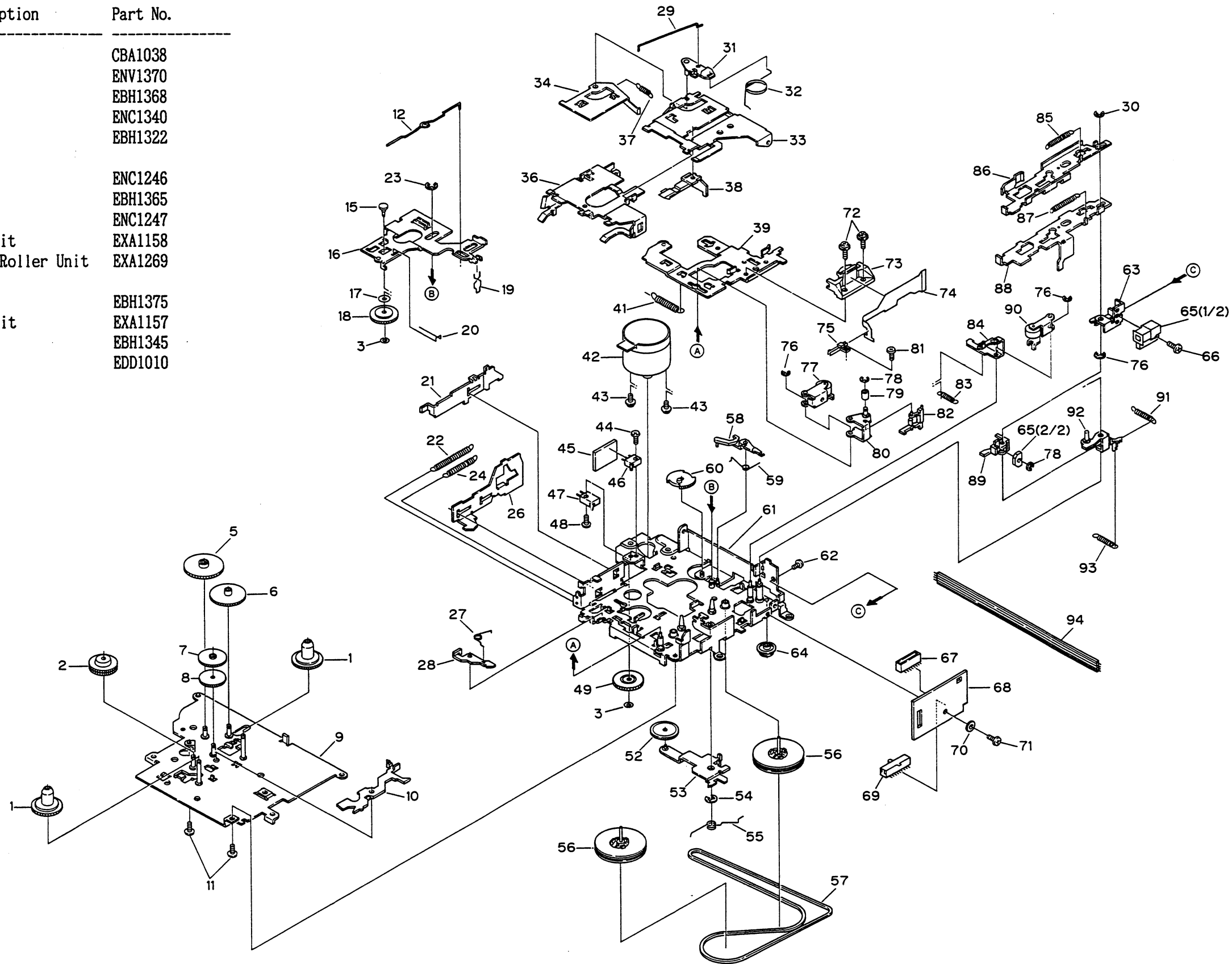


Fig. 20

17. CASSETTE MECHANISM ASSY EXPLODED VIEW
(KEH-2500SDK, KEH-2500) (1M Mechanism)

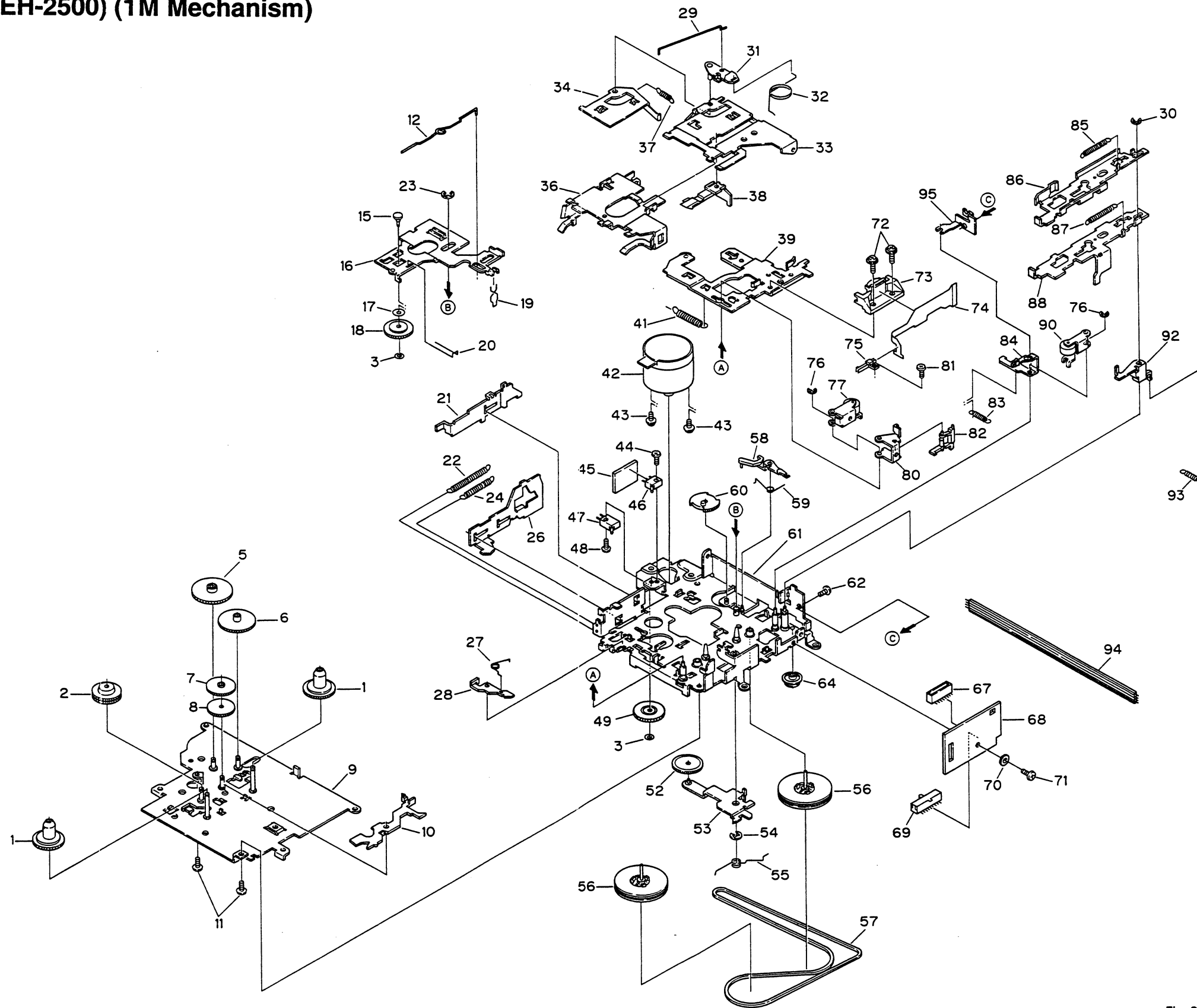


Fig. 21

Mark No.	Description	Part No.	Mark No.	Description	Part No.
81	Screw	CBA1038	89	.....
82	Arm	ENV1370	90	Pinch Roller Unit	EXA1270
83	Spring	EBH1368	91	.....
84	Arm	ENC1340	92	Arm	ENC1305
85	Spring	EBH1365	93	Spring	EBH1367
86	Lever	ENC1244	94	Cord	EDD1010
87	Spring	EBH1365	95	Bracket	ENC1339
88	Lever	ENC1245			

18. PACKING METHOD

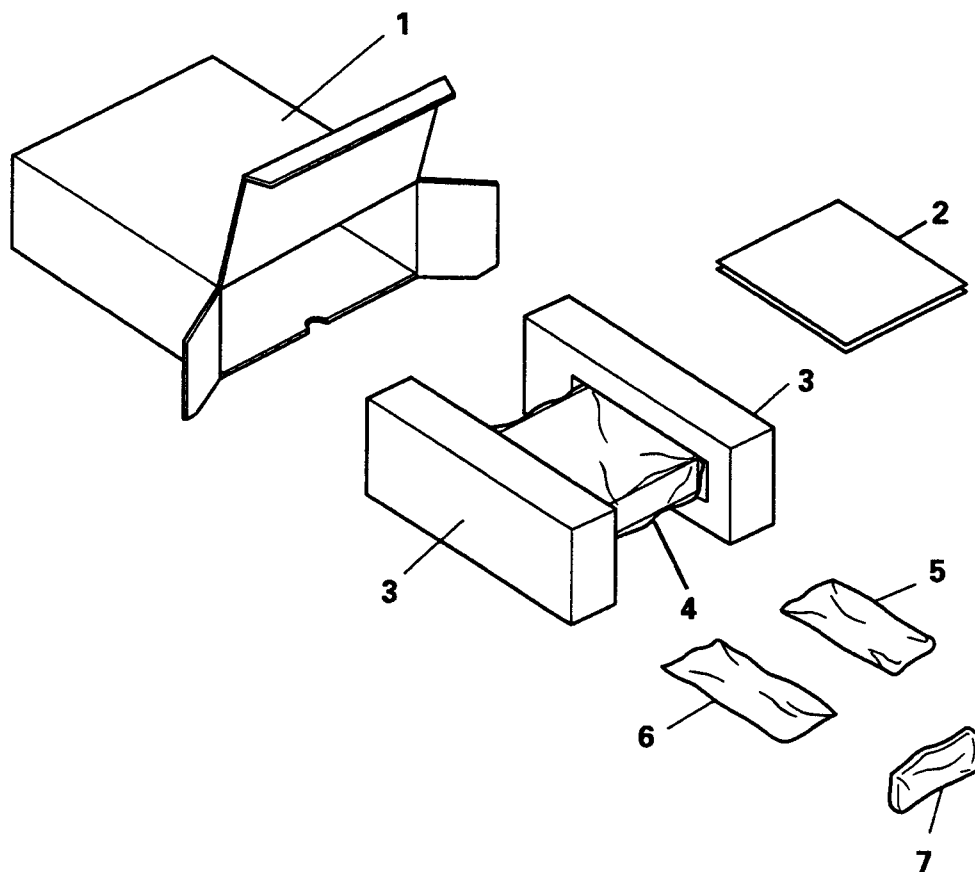


Fig. 22

●Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Reel Unit	EXA1251	41	Spring	EBH1363
2	Gear Unit	EXA1206	42	Motor Unit	EXA1264
3	Washer	CBF1037	43	Screw	PMS26P025FUC
4	.....		44	Screw	CBA1054
5	Gear	ENV1372	45	Gathering P. C. Board	ENX1005
6	Gear	ENV1344	46	Switch	ESH1004
7	Gear	ENV1374	47	Switch	CSN1005
8	Gear	ENV1373	48	Screw	CBA1025
9	Sub Chassis Unit	EXA1261	49	Gear	ENV1267
10	Arm	ENV1210	50	.....
11	Screw	BMZ20P025FMC	51	.....
12	Spring	EBH1381	52	Gear	ENV1343
13	.....		53	Arm Unit	EXA1155
14	.....		54	Washer	YE30FUC
15	Shaft	ELA1266	55	Spring	EBH1310
16	Lever	ENC1275	56	Flywheel Unit	EXA1257
17	Washer	EBF1015	57	Belt	ENT1018
18	Gear	ENV1342	58	Arm	ENV1206
19	Spring	EBH1361	59	Spring	EBH1317
20	Spring	EBH1362	60	Gear	ENV1371
21	Lever	ENC1302	61	Chassis Unit	EXA1267
22	Spring	EBH1359	62	Screw	JFZ20P025FNI
23	Washer	YE25FUC	63	.....
24	Spring	EBH1358	64	Pulley	ENV1291
25	.....		65	.....
26	Lever	ENC1256	66	.....
27	Spring	EBH1373	67	Plug	CKS1055
28	Arm	ENC1248	68	Gathering P. C. Board	ENX1004
29	Spring	EBH1308	69	Switch	ESH1003
30	Washer	YE15FUC	70	Washer	WH23FMC
31	Arm Unit	EXA1198	71	Screw	BSZ23P050FMC
32	Spring	EBH1374	72	Screw	EBA1028
33	Frame	ENC1204	73	Head Unit	EXA1163
34	Arm	ENC1263	74	P. C. Board	ENP1042
35	.....		75	Switch	ESN1005
36	Holder	ENC1257	76	Washer	YE20FUC
37	Spring	EBH1364	77	Pinch Roller Unit	EXA1266
38	Lever	ENV1287	78	.....
39	Head Base Unit	EXA1271	79	.....
40	.....		80	Arm	ENC1213

• Parts List

*:Non spare part

Mark No. Description	KEH-3500 SDK/WG	KEH-3500 /EW	KEH-3500 /IT	KEH-2500 SDK/WG	KEH-2500 /EW, X1B/IT	KEH-2500 /IT, X1B/IT
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
1 Carton	CHG2252	CHG2256	CHG2253	CHG2255	CHG2259	CHG2254
2-1 Owner's Manual	CRD1610	CRD1613	CRD1614	CRD1610	CRD1613	CRD1614
* 2-2 Card	CRY-062	CRY-062	CRY-062	CRY-062	CRY-062	CRY-062
* 2-3 Passport	CRY1013	.....	.....	CRY1013	.....	.....
3 Protector	CHP1517	CHP1517	CHP1517	CHP1517	CHP1517	CHP1517
4 Cover	CEG1092	CEG1092	CEG1092	CEG1092	CEG1092	CEG1092
5 Accessory Assy	CEA1759	CEA1759	CEA1759	CEA1759	CEA1759	CEA1759
6 Cord Assy	CDE3737	CDE3505	CDE3505	CDE3737	CDE3505	CDE3505
7 Case Assy	CXA5331	CXA5331	CXA5331	CXA5331	CXA5331	CXA5331

5 Accessory Assy CEA1759	
Mark No. Description	Part No.
5-1 Screw	CBA1002
5-2 Handle(×2)	CNC1631
5-3 Bush	CNV1009
* 5-4 Polyethylene Bag	E36-613

2-1 Owner's Manual		
Part No.	Model	Language
CRD1610	KEH-3500SDK/WG KEH-2500SDK/WG	German, French
CRD1613	KEH-3500/EW KEH-2500/EW KEH-2500/X1B/EW	English, French, German, Norwegian, Dutch, Italian, Finnish, Swedish, Spanish, Portuguese
CRD1614	KEH-3500/IT KEH-2500/IT KEH-2500/X1B/IT	English, Spanish, Italian, Finnish, Swedish, Portuguese

19. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/□S□□□J, RS1/□□S□□□J

Chip Capacitor (except for CQS.....)

CKS..... CCS..... CSZS.....

Tuner Amp Unit
Consists of Tuner Amp P.C.Board Volume P.C.Board Sub P.C.Board

Unit Number :

Unit Name : Tuner Amp Unit(KEH-3500SDK/WG)

MISCELLANEOUS

-----Circuit	Symbol &	No.	Part	Name-----	Part No.					
IC 51					LA1140B					
IC 101					LA2110					
IC 151					LA3430P					
IC 201					PA4017					
IC 251					LA3161P					
IC 301					CXA1102P					
IC 401					AN6263N					
IC 451					NJM2068S					
IC 452	702				TA7555S					
IC 551					PAL002A					
IC 701					LA2220					
IC 801					NJM2068D					
IC 851					PDR003B					
Q 1	54	203	205	207	401	402	461	704	851	DTC124ES
Q 51										2SA1048
Q 52	202	303	304	453	454	701	705	854	905	2SC2458
Q 53										2SJ105
Q 201										2SK435
Q 206	855									2SC3113
Q 251	912									2SD1992A
Q 455	456	465	466	801	802					DTC343TS
Q 460										2SD1920
Q 462	551	853	857							DTC114ES
Q 464	501	702	703	902						DTC114TS
Q 467	803									DTA114ES
Q 502										2SK330
Q 503										2SC2458
Q 504										2SC2498
Q 852	907									DTA114ES
Q 856	909	910								2SA1150
Q 901	904									2SB1243
Q 906	911									2SC2458
Q 908										2SD1684
Q 913										2SC2458
D 1	2	876								RD24JSB2
D 151	152	201	202	203	204	206	251	451	452	1SS133
D 205										Variable CapacitanceDiode SVC203-AB
D 252	908									RD9R1JSB2
D 453	454	455	456	457	458	459	851	853	854	1SS133
D 501										RD3R0ESB2
D 855	859	860	861	862	863	864	865	866	867	1SS133

-----Circuit	Symbol	& No.	Part	Name-----	Part No.			
D 868	869	870	871	872	873	874	907	1SS133
D 880								1SS133
D 901	902	903						ERA15-02VH
D 904								RD7R5JSB2
D 905								RD5R6JSB3
D 909								RD8R2JSB2
D 910								1SS133
D 911								ERA15-02VH
L 1				Ferri-Inductor				LAUR22M
L 51	52			Ferri-Inductor				LAU150K
L 201				Inductor				CTF1084
L 202				Coil				CTB1055
L 203				Ferri-Inductor				LAU220K
L 204				Ferri-Inductor				LAU470K
L 205				Ferri-Inductor				LAU4R7K
L 206				Ferri-Inductor				LAU101K
L 851				Ferri-Inductor				LAU2R2M
L 901				Ferri-Inductor				LAU101K
T 51				Coil				CTC1008
T 201				Coil				CTB1020
T 203				Coil				CTB1089
T 204				Coil				CTE1070
T 205				Coil				CTE1071
T 206				Coil				CTE1072
CF 1	2			Ceramic Filter				CTF-182
CF 201				Ceramic Filter				CTF1041
CF 202				Filter				CTF1085
X 151				Ceramic Resonator				CSS1104
X 201				Crystal Resonator				CSS1105
X 702				Ceramic Resonator				CSS1022
X 891				Crystal Resonator				CSS1011
IL 851				Lamp 14V 40mA				CEL1208
VR 51				Semi-fixed 150kΩ (B)				VRMB6VS154
VR 151				Semi-fixed 15kΩ (B)				VRMB6VS153
VR 301	302			Semi-fixed 33kΩ (B)				VRMB6VS333
VR 451				Volume 50kΩ (B)×2				CCS1199
VR 452				20kΩ (B)×2,50kΩ (G),200Ω (B)				CCS1209
VR 701				Semi-fixed 330Ω (B)				VRMB6VS331
EF 901	902	903		Filter				CCG1003
FE 1				FM Front End				CWB1036

RESISTORS

[illegible]

-----Circuit Symbol & No. Part	Name-----	Part No.	-----Circuit Symbol & No. Part	Name-----	Part No.
R 101 218		RD1/4PS183JL	R 860		RD1/4PS473JL
R 102 803 804		RS1/10S392J	R 866		RS1/8S104J
R 103		RS1/10S333J	R 868		RS1/10S2R2J
R 105 152 212 491 492 495 704 720 862 903		RS1/10S222J	R 869		RS1/10S122J
R 106		RD1/4PS114JL	R 877 878 879		RD1/4PS472JL
R 107		RS1/8S392J	R 880		RS1/10S473J
R 111		RD1/4PS242JL	R 881		RD1/4PS104JL
R 112 154 155 313 314		RS1/10S332J	R 902		RD1/4PS122JL
R 113		RS1/10S242J	R 906		RD1/2PS471JL
R 114 251 252		RS1/10S273J	R 913		RS1/10S223J
R 158		RS1/10S334J	R 916		RS1/8S102J
R 201		RD1/4PS220JL	R 919		RD1/2PS3R3JL
R 202		RD1/4PS681JL	R 920		RS1/8S223J
R 203 213 502		RD1/4PS222JL	R 921		RS1/10S472J
R 205 206 255 256		RS1/10S470J			
R 208 401 402 460		RS1/10S822J			
R 210 724 886		RD1/4PS473JL			
R 216 872		RD1/4PS222JL			
R 217		RD1/4PS223JL			
R 219		RD1/4PS221JL			
R 220 259 260 315 316 479		RS1/10S104J			
R 261 507 552 887 908 910		RS1/10S102J			
R 262 263		RD1/4PS473JL			
R 264 882 883 884		RS1/8S0R0J			
R 302 303 304		RS1/10S433J			
R 310		RS1/10S221J			
R 311 312		RS1/10S272J			
R 403 725		RS1/10S684J			
R 404		RS1/10S510J			
R 405 715		RS1/8S103J			
R 455 456 475 504 709		RS1/10S152J			
R 457		RD1/4PS822JL			
R 458 459		RS1/8S822J			
R 461 462		RS1/10S154J			
R 465		RD1/4PS472JL			
R 466 471 505 712 721 865 870 901 905		RS1/10S472J			
R 467 468 907 909		RD1/4PS471JL			
R 472 496		RS1/10S562J			
R 476		RS1/10S152J			
R 478		RS1/8S472J			
R 480		RD1/4PS272JL			
R 482 718 871		RS1/8S474J			
R 490		RD1/4PS273JL			
R 493 494		RS1/10S471J			
R 499 922 951 952		RS1/8S0R0J			
R 501		RS1/8S222J			
R 503 551		RS1/8S102J			
R 508		RS1/10S101J			
R 509		RS1/10S821J			
R 510		RD1/4PS101JL			
R 511 701		RS1/10S182J			
R 512 513		RS1/10S0R0J			
R 555		RS1/10S472J			
R 556		RD1/4PS392JL			
R 707		RS1/8S153J			
R 710		RS1/10S564J			
R 713		RS1/10S823J			
R 714 723 861 863 873 874 875 876 911		RS1/10S473J			
R 717		RD1/4PS102JL			
R 719		RD1/4PS0R0JL			
R 722 864		RD1/4PS104JL			
R 726		RD1/4PS102JL			
R 807 808		RS1/10S751J			
R 851 852 853 854 855 856 857 858 904		RD1/4PS103JL			
R 859		RS1/10S182J			
R 860		RD1/4PS473JL			
R 866		RS1/8S104J			
R 868		RS1/10S2R2J			
R 869		RS1/10S122J			
R 877 878 879		RD1/4PS472JL			
R 880		RS1/10S473J			
R 881		RD1/4PS104JL			
R 902		RD1/4PS122JL			
R 906		RD1/2PS471JL			
R 913		RS1/10S223J			
R 916		RS1/8S102J			
R 919		RD1/2PS3R3JL			
R 920		RS1/8S223J			
R 921		RS1/10S472J			
CAPACITORS					
C 1		CKSYB102K50			
C 2 62 65 101 102 201 223 231 401 503		CKSQYB103K25			
C 3 228		CKSYB103K50			
C 51 52 53 56 58 59 64 151 203 209		CKSQYB473K50			
C 54		CEAS010M50			
C 55		CCSQCH020C50			
C 57 60		CCSQCH330J50			
C 61 505 803 804		CCSQSL101J50			
C 63 501		CEAR47M50LS2			
C 66		CEAR47M50LL			
C 68		CEALNP4R7M16			
C 103		CEA150M16LS			
C 104		CKSQYB182K50			
C 105 224 229 478		CEA470M10LS			
C 106 110 507		CCSQCH681J50			
C 107		CKSQYB122K50			
C 108		CKSQYB682K50			
C 109		CCSQCH680J50			
C 111 112 113 114		CCSQCH391J50			
C 152 202 212 717		CKSQYB332K50			
C 154		CKSQYB153K50			
C 155		CEA3R3M50LL			
C 156		CEA010M50LS2			
C 157		CSZAR22M35			
C 159 160		CKSQYB183K25			
C 161 255 259		CEA101M10LS			
C 162 204 208 210		CKSQYB223K50			
C 163		CKSQYB681K50			
C 205		CCSQCH220J50			
C 206 207		CCSQCH820J50			
C 211 557 801		CEA2R2M50LS2			
C 213		CCSQCH390J50			
C 215 216 219 226 853 857		CKSQYB473K50			
C 217		CEA100M16LL			
C 218		CEA2R2M35NPLL			
C 220		CCSQCH430J50			
C 221 859		CCSQCH100D50			
C 222		CSZA010M35			
C 225 257 258		CKSQYB333K50			
C 227		CEA4R7M35LL			
C 230		CEA220M16LS			
C 232		CEA470M10LS			
C 233		CKSQYB103K25			
C 251 252		CKSQYB681K50			
C 253 254		CEA2R2M50LS2			
C 256 906		CEA101M10LS			
C 260 905		CEA101M10LS			
C 261		CEAS221M10			
C 301		CEA4R7M35LL			
C 302		CEA4R7M16LS2			

-----Circuit	Symbol & No. Part	Name-----	Part No.
C 303			CEA4R7M16NPLL
C 304			CEALNP4R7M16
C 305 306			CEAR68M50LL
C 307 308			CEA101M10LS
C 310			CEA100M16LS2
C 311			CKSYB223K50
C 312			CKSYB223K50
C 402 459 460			CCSQCH330J50
C 403			CEA470M10LS
C 404			CEA0R1M50LL
C 451 452			CEA100M16LS2
C 453			CKSQYB682K50
C 454			CKSYB682K50
C 457 458 706 712 718			CKSQYB473K50
C 461 462			CEA010M50NPLL
C 463 464			CEASR22M50
C 465			CEA470M10LS
C 469 470			CCSQCH470J50
C 477 481 805			CEA100M16LS2
C 483 484			CKPYB101K50L
C 502	4.7 μ F/16V(NP)		CCH1005
C 504			CCSSL101J50
C 506 851 852			CKSQYB103K25
C 551 552			CKSQYB182K50
C 553 554			CEA010M50LS2
C 555			CEAR47M50LS2
C 556			CEA010M50LS2
C 558			CEA101M10LS
C 559 560 561 562 856 907			CKSYB102K50
C 701 708			CEAS470M16
C 702			CEA100M16LS2
C 703 704			CQMA102J50
C 705			CKSQYB222K50
C 707			CKSQYB223K50
C 709			CEAR33M50LL
C 710			CQMA683J50
C 711			CEA010M50LS2
C 713 714			CQMA473J50
C 715			CKSYB473K50
C 716 901 903			CKSQYB102K50
C 802			CEA2R2M50LS2
C 806			CEA100M16LS2
C 854			CKSYB473K50
C 855			CASQA4R7M10
C 858			CEA4R7M16LS2
C 860			CCSQCH100D50
C 861			CEA470M6R3LL
C 862	470 μ F/16V		CCH-114
C 863			CKSQYB103K25
C 902			CEAS472M16
C 904	1000 μ F/6.3V		CCH1112
C 908			CKSYB104K50
C 910			CKSQYB104K25

Unit Number :

Unit Name : Key Board Unit

(KEH-3500SDK/WG,KEH-3500/EW,KEH-2500SDK/WG,
KEH-2500/EW)

MISCELLANEOUS

IC 751			LC7582E
D 751 752 753 754			MA153-MC
S 751 752 753 754	Switch		CSG1044
S 755 756 757 758	Switch		CSG1044
S 759 760 761 762	Switch		CSG1044
IL 751 752 753	Lamp 14V 40mA		CEL1295
LCD751	LCD		CAW1202

-----Circuit	Symbol & No. Part	Name-----	Part No.
RESISTORS			
R 751 752 753 754			RS1/8S103J
R 755 756			RS1/10S104J
R 758			RS1/10S272J
R 759 767			RS1/8S512J
R 760 764 768			RS1/10S183J
R 762 766			RS1/8S272J
R 763			RS1/10S512J
R 769			RS1/8S163J
R 770 772 773 776 777			RS1/8S0R0J
R 771 774 775			RS1/10S0R0J
CAPACITORS			
C 751			CKSQYF224Z25
C 752			CCSQCH301J50

Tuner Amp Unit
Consists of Tuner Amp P.C.Board Volume P.C.Board Sub P.C.Board

Unit Number :
Unit Name : Tuner Amp Unit(KEH-3500/EW)

MISCELLANEOUS

-----Circuit Symbol & No. Part Name----- Part No.

IC 51	LA1140B
IC 101	LA2110
IC 151	LA3430P
IC 201	PA4017
IC 251	LA3161P
IC 301	CXA1102P
IC 401	AN6263N
IC 451	NJM2068S
IC 452	TA75558S
IC 551	PAL002A
IC 801	NJM2068D
IC 851	PDR003B
Q 1 54 203 205 207 401 402 461 851	DTC124ES
Q 51	2SA1048
Q 52 202 303 304 453 454 854 905	2SC2458
Q 53	2SJ105
Q 201	2SK435
Q 206 855	2SC3113
Q 251 912	2SD1992A
Q 455 456 465 466 801 802	DTC343TS
Q 462 551 853 857	DTC114ES
Q 467 803	DTA114ES
Q 501 902	DTC114TS
Q 502	2SK330
Q 503	2SC2458
Q 504	2SC2498
Q 852 907	DTA114ES
Q 856 909 910	2SA1150
Q 901 904	2SB1243
Q 906 911	2SC2458
Q 908	2SD1684
Q 913	2SC2458
D 1 2 876	RD24JSB2
D 151 152 201 202 203 204 206 251 451 452	1SS133
D 205	Variable CapacitanceDiode SVC203-AB
D 252 908	RD9R1JSB2
D 453 454 455 456 457 458 459 851 853 854	1SS133
D 501	RD3R0ESB2
D 859 860 861 862 863 864 865 866 867	1SS133
D 868 869 870 871 872 873 874 907	1SS133
D 880	1SS133
D 901 902 903	ERA15-02VH
D 904	RD7R5JSB2
D 905	RD5R6JSB3
D 909	RD8R2JSB2
D 910	1SS133
D 911	ERA15-02VH
L 1	LAUR22M
L 51 52	Ferri-Inductor LAU150K

L 201	Inductor	CTF1084
L 202	Coil	CTB1055
L 203	Ferri-Inductor	LAU220K
L 204	Ferri-Inductor	LAU470K
L 205	Ferri-Inductor	LAU4R7K

L 206	Ferri-Inductor	LAU101K
L 851	Ferri-Inductor	LAU2R2M
L 901	Ferri-Inductor	LAU101K
T 51	Coil	CTC1008
T 201	Coil	CTB1020

T 203	Coil	CTB1089
T 204	Coil	CTE1070
T 205	Coil	CTE1071
T 206	Coil	CTE1072
CF 1 2	Ceramic Filter	CTF-182

CF 201	Ceramic Filter	CTF1041
CF 202	Filter	CTF1085
X 151	Ceramic Resonator	CSS1104
X 201	Crystal Resonator	CSS1105

X 891	Crystal Resonator	CSS1011
IL 851	Lamp 14V 40mA	CEL1208
VR 51	Semi-fixed 150kΩ (B)	VRMB6VS154
VR 151	Semi-fixed 15kΩ (B)	VRMB6VS153
VR 301 302	Semi-fixed 33kΩ (B)	VRMB6VS333

VR 451	Volume 50kΩ (B)×2	CCS1199
VR 452	Volume/Switch 20kΩ (B)×2,50kΩ (G),200Ω (B)	CCS1209
EF 901 902 903	Filter	CCG1003
FE 1	FM Front End	CWB1036

RESISTORS

R 1	RD1/4PS331JL
R 2	RS1/8S223J
R 3	RD1/4PS472JL
R 52 506	RS1/10S331J
R 54 151 801 802	RS1/10S223J

R 55 104 211	RS1/10S682J
R 58 156 204 221 307 453 454 463 464	RS1/10S473J
R 59 66 207 305 306 805 806 809 810	RS1/10S153J
R 60	RD1/4PS153JL
R 61 67 108 109 110 153 157 257 258 309	RS1/10S472J

R 62 64 209 214 215 222 917 918	RS1/10S103J
R 63 914	RS1/10S473J
R 65	RS1/10S123J
R 68	RD1/4PS474JL
R 69 477 720	RS1/10S0R0J

R 101 218	RD1/4PS183JL
R 102 803 804	RS1/10S392J
R 103	RS1/10S333J
R 105 152 212 491 492 495 862 903	RS1/10S222J
R 106	RD1/4PS114JL

R 107	RS1/8S392J
R 111	RD1/4PS242JL
R 112 154 155 313 314	RS1/10S332J
R 113	RS1/10S242J
R 114 251 252	RS1/10S273J

R 158	RS1/10S334J
R 201	RD1/4PS220JL
R 202	RD1/4PS681JL
R 203 213 502	RD1/4PS222JL
R 205 206 255 256	RS1/10S470J

R 208 401 402 460	RS1/10S822J
R 210 886	RD1/4PS473JL
R 216 872	RD1/4PS222JL
R 217	RD1/4PS223JL
R 219	RD1/4PS221JL

====Circuit	Symbol & No. Part	Name=====	Part No.	====Circuit	Symbol & No. Part	Name=====	Part No.
R 220	259 260 315 316 479		RS1/10S104J	CAPACITORS			
R 261	507 552 887 908 910		RS1/10S102J	C 1			CKSYB102K50
R 262	263		RD1/4PS473JL	C 2	62 65 101 102 201 223 231 401 503		CKSQYB103K25
R 264	882 883		RS1/8S0R0J	C 3	228		CKSYB103K50
R 302	303 304		RS1/10S433J	C 51	52 53 56 58 59 64 151 203 209		CKSQYB473K50
				C 54			CEAS010M50
R 310			RS1/10S221J				
R 311	312		RS1/10S272J	C 55			CCSQCH020C50
R 403			RS1/10S684J	C 57	60		CCSQCH330J50
R 404			RS1/10S510J	C 61	505 803 804		CCSQSL101J50
R 405			RS1/8S103J	C 63	501		CEAR47M50LS2
				C 66			CEAR47M50LL
R 455	456 475 504		RS1/10S152J				
R 457			RD1/4PS822JL	C 68			CEALNP4R7M16
R 458	459		RS1/8S822J	C 103			CEA150M16LS
R 461	462		RS1/10S154J	C 104			CKSQYB182K50
R 465			RD1/4PS472JL	C 105	224 229 478		CEA470M10LS
				C 106	110 507		CCSQCH681J50
R 466	471 505 865 870 901 905		RS1/10S472J				
R 467	468 907 909		RD1/4PS471JL	C 107			CKSQYB122K50
R 472	496		RS1/10S562J	C 108			CKSQYB682K50
R 476			RS1/10S152J	C 109			CCSQCH680J50
R 478			RS1/8S472J	C 111	112 113 114		CCSQCH391J50
				C 152	202 212		CKSQYB332K50
R 490			RD1/4PS273JL				
R 493	494		RS1/10S471J	C 154			CKSQYB153K50
R 499	922 951 952		RS1/8S0R0J	C 155			CEA3R3M50LL
				C 156			CEA010M50LS2
R 501			RS1/8S222J	C 157			CSZAR22M35
R 503	551		RS1/8S102J	C 159	160		CKSQYB183K25
R 508			RS1/10S101J				
R 509			RS1/10S821J	C 161	255 259		CEA101M10LS
R 510			RD1/4PS101JL	C 162	204 208 210		CKSQYB223K50
				C 205			CCSQCH220J50
R 511			RS1/10S182J	C 206	207		CCSQCH820J50
R 512	513		RS1/10S0R0J				
R 555			RS1/10S472J	C 211	557 801		CEA2R2M50LS2
R 556			RD1/4PS392JL	C 213			CCSQCH390J50
R 722	864		RD1/4PS104JL	C 215	216 219 226 853 857		CKSQYB473K50
				C 217			CEA100M16LL
R 723	861 863 873 874 875 876 911		RS1/10S473J	C 218			CEA2R2M35NPLL
R 807	808		RS1/10S751J				
R 851	852 853 854 855 856 857 858 904		RD1/4PS103JL	C 220			CCSQCH430J50
R 859			RS1/10S182J	C 221	859		CCSQCH100D50
				C 222			CSZA010M35
R 860			RD1/4PS473JL	C 225	257 258		CKSQYB333K50
R 866			RS1/8S104J	C 227			CEA4R7M35LL
R 868			RS1/10S2R2J				
R 869			RS1/10S122J	C 230			CEA220M16LS
R 871			RS1/8S474J	C 232			CEA470M10LS
R 877	878 879		RD1/4PS472JL	C 233			CKSQYB103K25
				C 251	252		CKSQYB681K50
R 880			RS1/10S473J	C 253	254		CEA2R2M50LS2
R 881			RD1/4PS104JL				
R 902			RD1/4PS122JL				
R 906			RD1/2PS471JL	C 256	906		CEA101M10LS
R 913			RS1/10S223J	C 260	905		CEA101M10LS
				C 261			CEAS221M10
R 916			RS1/8S102J	C 301			CEA4R7M35LL
R 919			RD1/2PS3R3JL	C 302			CEA4R7M16LS2
R 920			RS1/8S223J				
R 921			RS1/10S472J	C 303			CEA4R7M16NPLL
				C 304			CEALNP4R7M16
				C 305	306		CEAR68M50LL
				C 307	308		CEA101M10LS
				C 310			CEA100M16LS2
				C 311			CKSYB223K50
				C 312			CKSYB223K50
				C 402	459 460		CCSQCH330J50
				C 403			CEA470M10LS
				C 404			CEA0R1M50LL
				C 451	452		CEA100M16LS2
				C 453			CKSQYB682K50
				C 454			CKSYB682K50
				C 457	458		CKSQYB473K50
				C 461	462		CEA010M50NPLL

=====Circuit	Symbol & No.	Part	Name=====	Part No.
C 463	464			CEASR22M50
C 465				CEA470M10LS
C 469	470			CCSQCH470J50
C 477	481	805		CEA100M16LS2
C 502			4.7 μ F/16V(NP)	CCH1005
C 504				CCSSL101J50
C 506	851	852		CKSQYB103K25
C 551	552			CKSQYB182K50
C 553	554			CEA010M50LS2
C 555				CEAR47M50LS2
C 556				CEA010M50LS2
C 558				CEA010M10LS
C 559	560	561	562 856 907	CKSYB102K50
C 802				CEA2R2M50LS2
C 806				CEA100M16LS2
C 854				CKSYB473K50
C 855				CASAQ4R7M10
C 858				CEA4R7M16LS2
C 860				CCSQCH100D50
C 861				CEA470M6R3LL
C 862			470 μ F/16V	CCH-114
C 863				CKSQYB103K25
C 901	903			CKSQYB102K50
C 902				CEAS472M16
C 904			1000 μ F/6.3V	CCH1112
C 908				CKSYB104K50
C 910				CKSQYB104K25

Unit Number :
Unit Name : Key Board Unit (KEH-3500/IT, KEH-2500/IT)

MISCELLANEOUS

IC 751				LC7582E
D 751	752	753	754	MA153-MC
S 751	752	753	754	Switch
S 755	756	757	758	Switch
S 759	760	761	762	Switch
IL 751	752	753		Lamp 14V 40mA
LCD751				LCD

RESISTORS

R 751	752	753	754		RS1/8S103J
R 755	756				RS1/10S104J
R 758					RS1/10S272J
R 759	767				RS1/8S512J
R 760	764	768			RS1/10S183J
R 762	766				RS1/8S272J
R 763					RS1/10S512J
R 769					RS1/8S163J
R 770	772	773	776	777	RS1/8S0R0J
R 771	774	775			RS1/10S0R0J

CAPACITORS

C 751				CKSQYF224Z25
C 752				CCSQCH301J50

Unit Number :
Unit Name : P.C.Board(A)(KEH-3500SDK/WG, KEH-3500/EW, IT)

-----Circuit	Symbol & No.	Part	Name-----	Part No.
S 2			Switch(FWD/REV)	ESH1003
D 1				F1SR35-100A

Unit Number :
Unit Name : P.C.Board(A)(KEH-2500SDK/WG, KEH-2500/EW, IT)

-----Circuit	Symbol & No.	Part	Name-----	Part No.
S 2			Switch(FWD/REV)	ESH1003

Unit Number :
Unit Name : P.C.Board(B)

S 3			Switch(MUTE)	ESH1004
S 4			Switch(TAPE/TUN)	CSN1005

MiscellaneousPartsList(KEH-3500SDK/WG, KEH-3500/EW, IT)

S 1			Switch(MUTE)	ESN1005
M 1			MotorUnit	EXA1264
HD 1			HeadAssy	EXA1163
SO 1			Solenoid	EXP1010

MiscellaneousPartsList(KEH-2500SDK/WG, KEH-2500/EW, IT)

S 1			Switch(MUTE)	ESN1005
M 1			MotorUnit	EXA1264
HD 1			HeadAssy	EXA1163

Tuner Amp Unit (KEH-2500SDK/WG, KEH-2500/EW, IT)

- The KEH-2500SDK/WG, KEH-2500/EW and KEH-2500/IT Parts Lists enumerate the parts which differ from those enumerated in the KEH-3500SDK/WG Parts List only.

The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.

The KEH-3500SDK/WG Parts List is given on page 64.

MISCELLANEOUS

Circuit Symbol & No.	KEH-3500SDK/WG	KEH-2500SDK/WG	KEH-2500/EW KEH-2500/X1B/EW	KEH-2500/IT KEH-2500/X1B/IT
	Part No.	Part No.	Part No.	Part No.
IC301	CXA1102P	.....	.....	.....
IC401	AN6263N	.....	.....	.....
IC701	LA2220	LA2220	.....	.....
IC702	TA75558S	TA75558S	.....	.....
IC801	NJM2068D	.....	.....	.....
Q303, 304	2SC2458	.....	.....	.....
Q401	DTC124ES	.....	.....	.....
Q402	DTC124ES	.....	.....	.....
Q460	2SD1920	2SD1920	.....	.....
Q464, 702, 703	DTC114TS	DTC114TS	.....	.....
Q701	2SC2458	2SC2458	.....	.....
Q704	DTC124ES	DTC124ES	.....	.....
Q705	2SC2458	2SC2458	.....	.....
Q801, 802	DTC343TS	.....	.....	.....
Q803	DTA114ES	.....	.....	.....
D853, 854	1SS133	.....	.....	.....
D855	1SS133	1SS133	.....	.....
VR301, 302	VRMB6VS333	.....	.....	.....
VR452	CCS1209	CCS1210	CCS1210	CCS1210
VR701	VRMB6VS331	VRMB6VS331	.....	.....
X702	CSS1022	CSS1022	.....	.....
1L851	CEL1208	CEL1208	CEL1208	CEL1207

RESISTORS

Circuit Symbol & No.	KEH-3500SDK/WG	KEH-2500SDK/WG	KEH-2500/EW KEH-2500/X1B/EW	KEH-2500/IT KEH-2500/X1B/IT
	Part No.	Part No.	Part No.	Part No.
R302	RS1/10S433J	.....	.....	.....
R303, 304	RS1/10S433J	.....	.....	.....
R307	RS1/10S473J	.....	.....	.....
R309	RS1/10S472J	.....	.....	.....
R311, 312	RS1/10S272J	.....	.....	.....
R313, 314	RS1/10S332J	.....	.....	.....
R315, 316	RS1/10S104J	.....	.....	.....
R351, 352	.....	RS1/10S102J	RS1/10S102J	RS1/10S102J
R401, 402	RS1/8S822J	.....	.....	.....
R403	RS1/10S684J	.....	.....	.....
R404	RS1/10S510J	.....	.....	.....
R405	RS1/8S103J	.....	.....	.....
R480	RD1/4PS272JL	RD1/4PS272JL	.....	.....
R482, 718	RS1/8S474J	RS1/8S474J	.....	.....
R551	RS1/8S102J	RS1/8S392J	RS1/8S392J	RS1/8S392J
R552	RS1/10S102J	RS1/10S392J	RS1/10S392J	RS1/10S392J
R701	RS1/10S182J	RS1/10S182J	.....	.....
R702, 714	RS1/10S473J	RS1/10S473J	.....	.....
R704	RS1/10S222J	RS1/10S222J	.....	.....
R705	RS1/10S103J	RS1/10S103J	.....	.....
R706	RS1/10S123J	RS1/10S123J	.....	.....
R707	RS1/8S153J	RS1/8S153J	.....	.....
R708	RS1/10S682J	RS1/10S682J	.....	.....
R709	RS1/10S152J	RS1/10S152J	.....	.....
R710	RS1/10S564J	RS1/10S564J	.....	.....
R712	RS1/10S472J	RS1/10S472J	.....	.....
R713	RS1/10S823J	RS1/10S823J	.....	.....
R715	RS1/8S103J	RS1/8S103J	.....	.....
R716	RS1/10S223J	RS1/10S223J	.....	.....
R717	RD1/4PS102JL	RD1/4PS102JL	.....	.....
R719	RD1/4PS0R0JL	RD1/4PS0R0JL	.....	.....
R720	RS1/10S222J	RS1/10S222J	RS1/10S0R0J	RS1/10S0R0J
R721	RS1/10S472J	RS1/10S472J	.....	.....
R724	RD1/4PS473JL	RD1/4PS473JL	.....	.....
R725	RS1/10S684J	RS1/10S684J	.....	.....
R726	RD1/4PS102JL	RD1/4PS102JL	.....	.....
R801, 802	RS1/10S223J	.....	.....	.....
R803, 804	RS1/10S392J	.....	.....	.....
R805, 806, 809, 810	RS1/10S153J	.....	.....	.....
R807, 808	RS1/10S751J	.....	.....	.....
R884	RS1/8S0R0J	RS1/8S0R0J	.....	.....
R885	RS1/10S0R0J	RS1/10S0R0J	.....	.....

CAPACITORS

Circuit Symbol & No.	KEH-3500SDK/WG	KEH-2500SDK/WG	KEH-2500/EW KEH-2500/X1B/EW	KEH-2500/IT KEH-2500/X1B/IT
	Part No.	Part No.	Part No.	Part No.
C163	CKSQYB681K50	CKSQYB681K50	.....	.....
C301	CEA4R7M35LL	.....	.....	.....
C302	CEA4R7M16LS2	.....	.....	.....
C303	CEA4R7M16NPLL	.....	.....	.....
C304	CEALNP4R7M16	.....	.....	.....
C305, 306	CEAR68M50LL	.....	.....	.....
C307, 308	CEA101M10LS	.....	.....	.....
C311, 312	CKSYB222K50	.....	.....	.....
C351, 352	.....	CEALNP100M16	CEA100M16LS2	CEA100M16LS2
C401	CKSQYB103K25	.....	.....	.....
C402	CCSQCH330J50	.....	.....	.....
C403	CEA470M10LS	.....	.....	.....
C404	CEA0R1M50LL	.....	.....	.....
C483, 484	CKPYB101K50L	CKPYB101K50L	.....	CKPYB101K50L
C551, 552	CKSQYB182K50	CKSQYB102K50	CKSQYB102K50	CKSQYB102K50
C701, 708	CEAS470M16	CEAS470M16	.....	.....
C702	CEA100M16LS2	CEA100M16LS2	.....	.....
C703, 704	CQMA102J50	CQMA102J50	.....	.....
C705	CKSQYB222K50	CKSQYB222K50	.....	.....
C706, 712, 718	CKSQYB473K50	CKSQYB473K50	.....	.....
C707	CKSQYB223K50	CKSQYB223K50	.....	.....
C709	CEAR33M50LL	CEAR33M50LL	.....	.....
C710	CQMA683J50	CQMA683J50	.....	.....
C711	CEA010M50LS2	CEA010M50LS2	.....	.....
C713, 714	CQMA473J50	CQMA473J50	.....	.....
C715	CKSYB473K50	CKSYB473K50	.....	.....
C716	CKSQYB102K50	CKSQYB102K50	.....	.....
C717	CKSQYB333K50	CKSQYB333K50	.....	.....
C801, 802	CEA2R2M50LS2	.....	.....	.....
C803, 804	CCSQCH330J50	.....	.....	.....
C805, 806	CEA100M16LS2	.....	.....	.....

Tuner Amp Unit(KEH-3500/IT)

- The KEH-3500/IT Parts Lists enumerate the parts which differ from those enumerated in the KEH-3500/EW Parts List only.

The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.

The KEH-3500/EW Parts List is given on page 67.

MISCELLANEOUS

Circuit Symbol & No.	KEH-3500/EW	KEH-3500/IT
	Part No.	Part No.
IL851	CEL1208	CEL1207

CAPACITORS

Circuit Symbol & No.	KEH-3500/EW	KEH-3500/IT
	Part No.	Part No.
C483, 484	CKPYB101K50L

ADDITIONAL

 **PIONEER**
The Art of Entertainment

Service Manual

ORDER NO.
CRT1428

CASSETTE MECHANISM ASSEMBLY

CX-197

NOTE

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for the model under repair.
- CX197 (CRT1328) does not have a Key-off function, but the key-off function is shown in this service manual of the CX-197 (CRT1428).

Model	Service Manual	Cassette Mechanism Assembly
KEH-M7400RDS/EW	CRT1429	EXK1735

Model	Service Manual	Cassette Mechanism Assembly

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Meisele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
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FU DEC. 1991 Printed in Japan

1. DISASSEMBLY

Note: Always use new washer and E washer at the time of reassembling.

● How to Remove the Belt and Motor

1. Remove screw A fixing the FR lever. (Fig.1)
2. Remove three screws B fixing the sub-chassis unit. Move the unit first in Direction A, then in B direction, and lift it upward for removal. (Fig.2)
3. The belt can now be removed. (Fig.3)
4. Remove two screws C. The motor can be removed. (Fig.3)

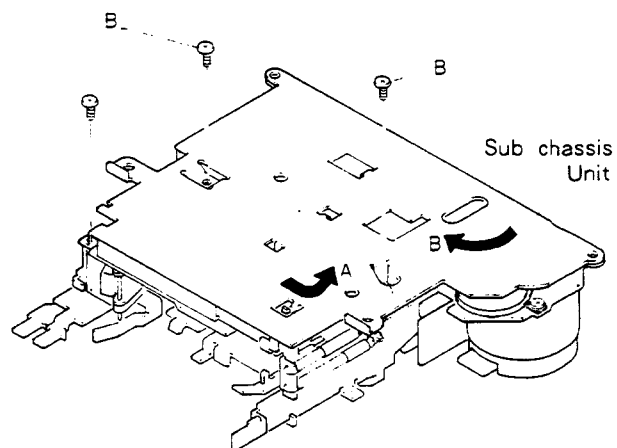


Fig. 2

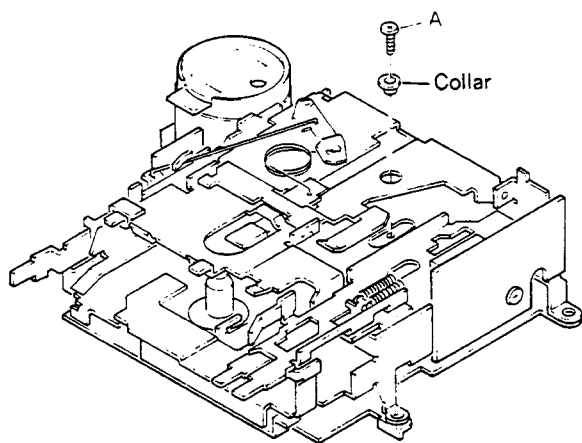


Fig. 1

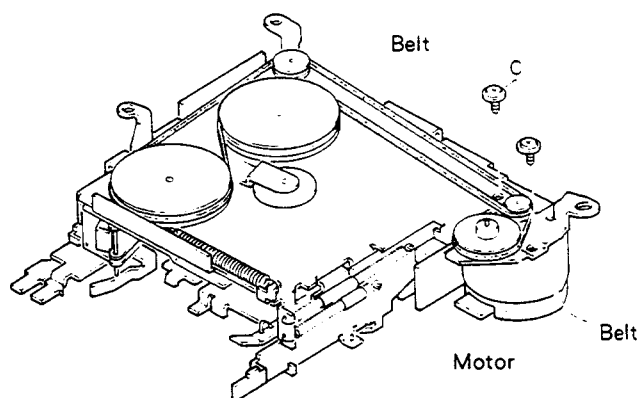
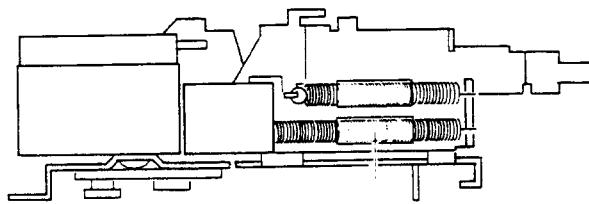


Fig. 3

● How to Remove the Pinch Roller Unit and Head



Spring A

Fig. 4

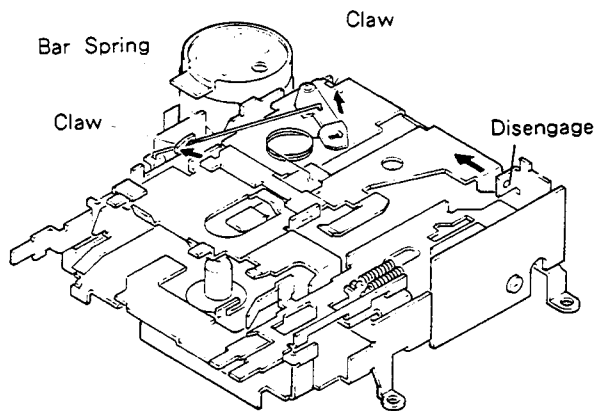


Fig. 5

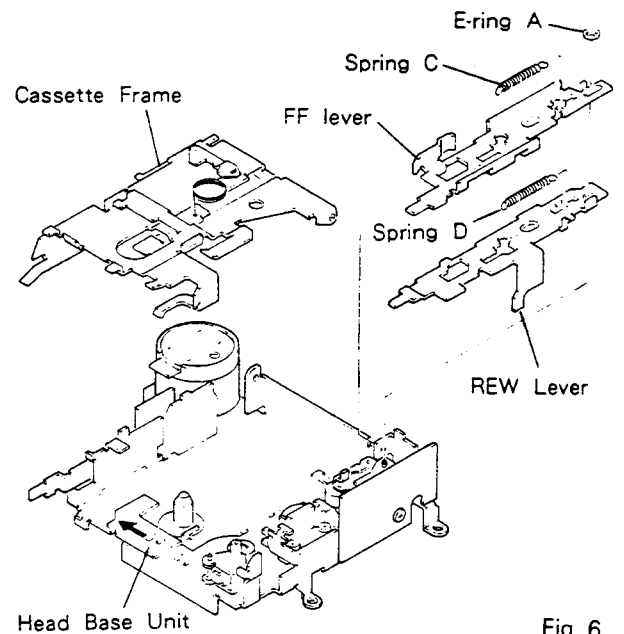


Fig. 6

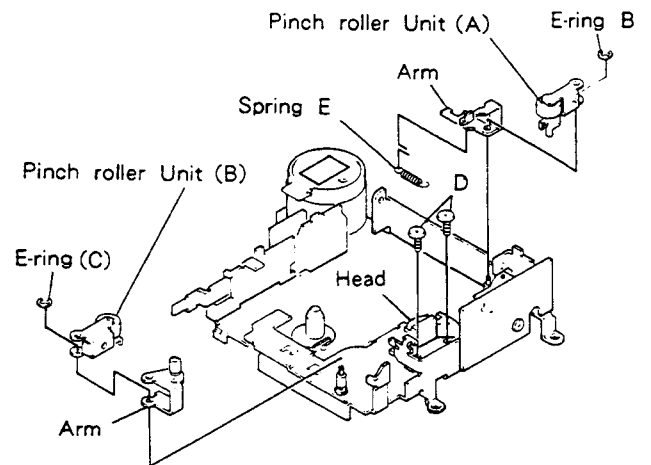


Fig. 7

1. Remove spring A. (Fig.4)
2. Extend claws (2 points). (Fig.5)
3. Remove bar Spring. (Fig.5)
4. Disengage projection by moving in a direction of arrow mark. (Fig.5)
5. The cassette frame is removed. (Fig.6)
6. Remove springs C and D. (Fig.6)
7. Remove E-ring A. (Fig.6)
8. Remove FF/REW levers. (Fig.6)
9. Move head base unit forward. (Fig.6)
10. Remove spring E. (Fig.7)
11. Remove E-ring B. The pinch roller unit (A) can be removed. (Fig.7)
12. Remove E-ring C. The pinch roller unit (B) can be removed. (Fig.7)
13. Remove two screws D. The head can be removed. (Fig.7)

2. ADJUSTMENT

2.1 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation: $3,000 \begin{smallmatrix} +90 \\ -30 \end{smallmatrix} \text{ Hz}$ $(4.76 \text{ cm/s} \begin{smallmatrix} +3 \\ -1 \end{smallmatrix} \%)$</p> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>	<p>■ Wow and flutter: Less than 0.2% (WRMS)</p> <p>Using an NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>
<p>■ Fast forward and rewinding time: 100 – 120 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 35 – 65g • cm</p> <p>Using a cassette type torque meter (100 g•cm), measure the minimum value while in the play mode. Measuring time shall be 2.5 – 6 seconds.</p>	<p>■ F.F. torque: 70 – 120g • cm</p> <p>Using a cassette type torque meter (120 g•cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: 70 – 120g • cm</p> <p>Using a cassette type torque meter (120 g•cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 2 – 6g • cm</p> <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<p>■ Cassette loading force: Less than 0.7 kg</p> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>

2.2 AZIMUTH ADJUSTMENT

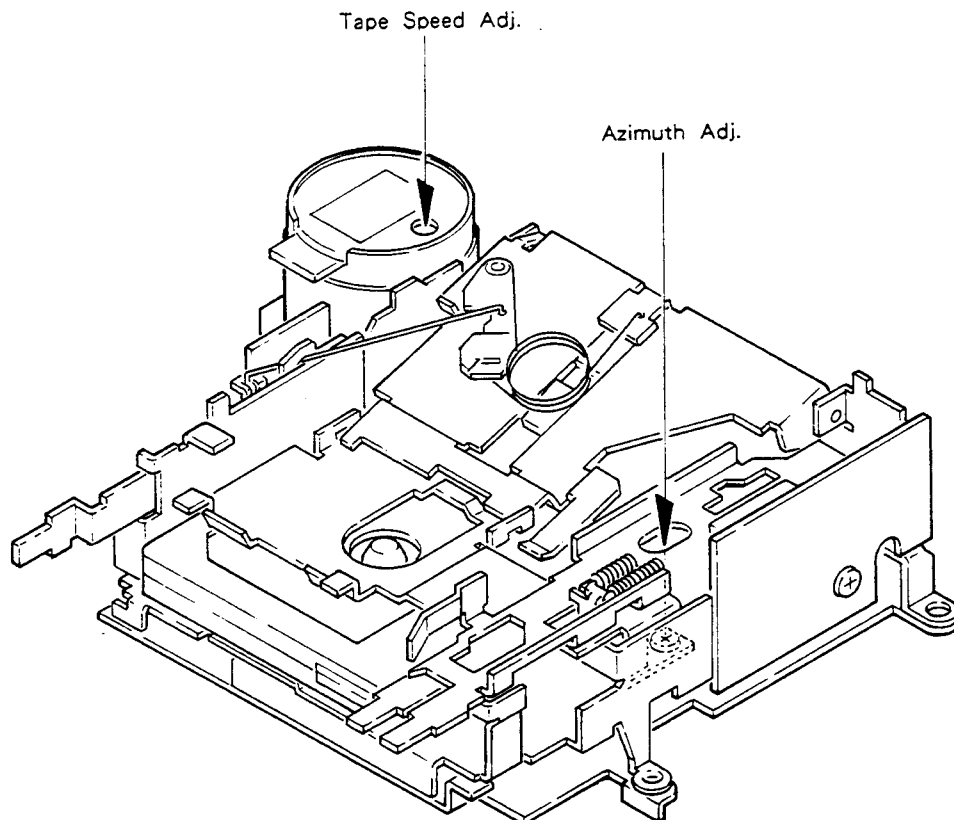


Fig. 8

● To Adjust (EXK1750)

1. Play "A" side of NCT-110 (10kHz, - 10dB). Adjust the screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

2.3 TAPE SPEED ADJUSTMENT

1. Reproduce NCT-111 (3kHz, - 10dB). Adjust the semifixed resistor so that frequency counter shows 3010Hz (+80Hz, - 40Hz).

3. MECHANISM DESCRIPTION

● Loading operation

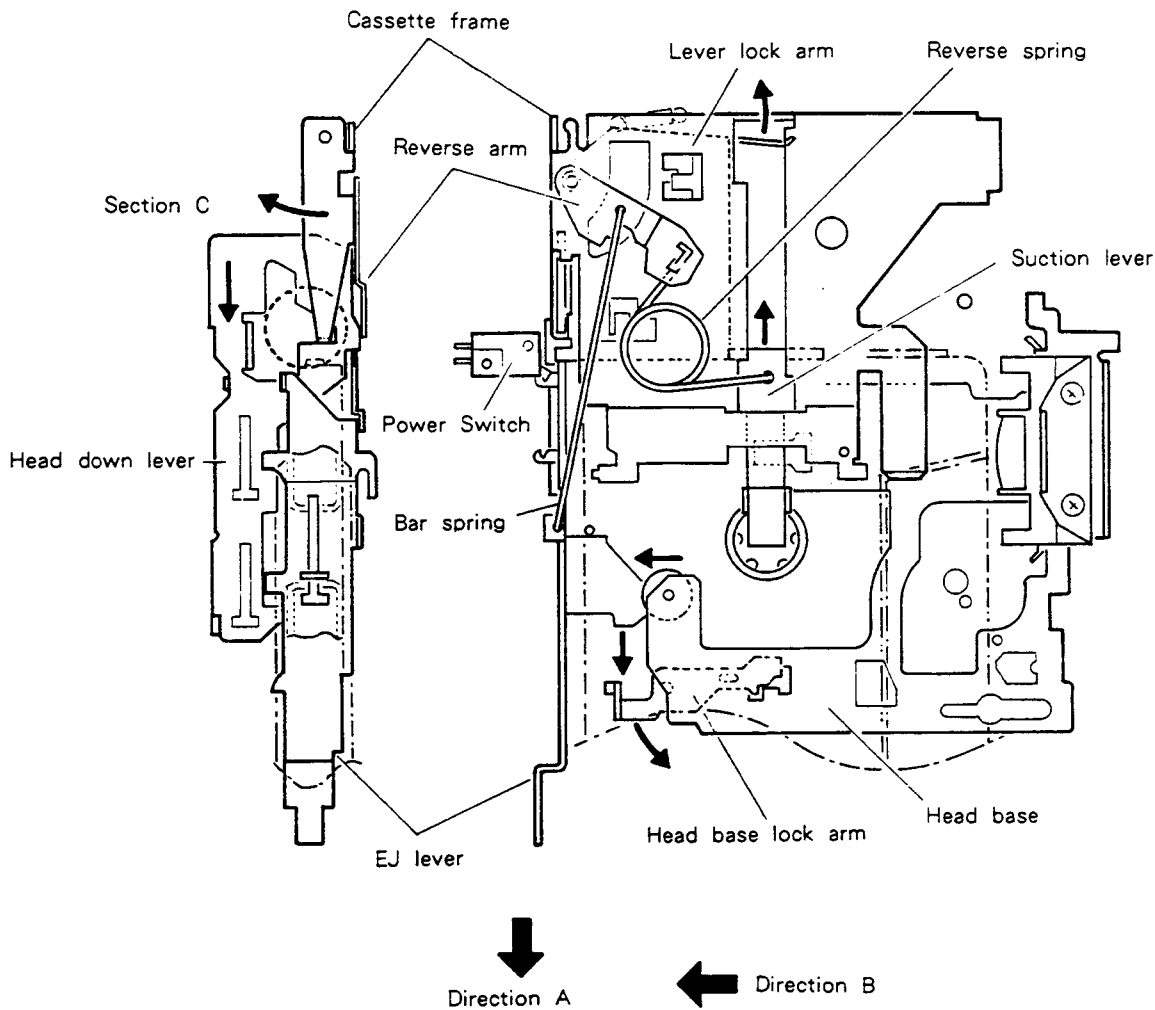


Fig. 9

1. A cassette tape, when inserted, pushes a suction lever.
The reverse spring rotates to move past the reverse point. Then, the cassette is drawn by a force of a reverse spring (suction operation).
2. After suction, the lever lock arm is pressed to be unlocked.
3. The head down lever is unlocked and the lever moves in Direction A.
4. While moving, the EJ lever turns ON the power switch.
5. The cassette frame engaged to the section C of the head down lever turns. (Cassette drop operation)
6. At the stroke end, the head down lever turns the head base lock arm.
7. A Stopper of the head base lock arm is released, and the head base moves forward (Direction.B).

● MS Operation

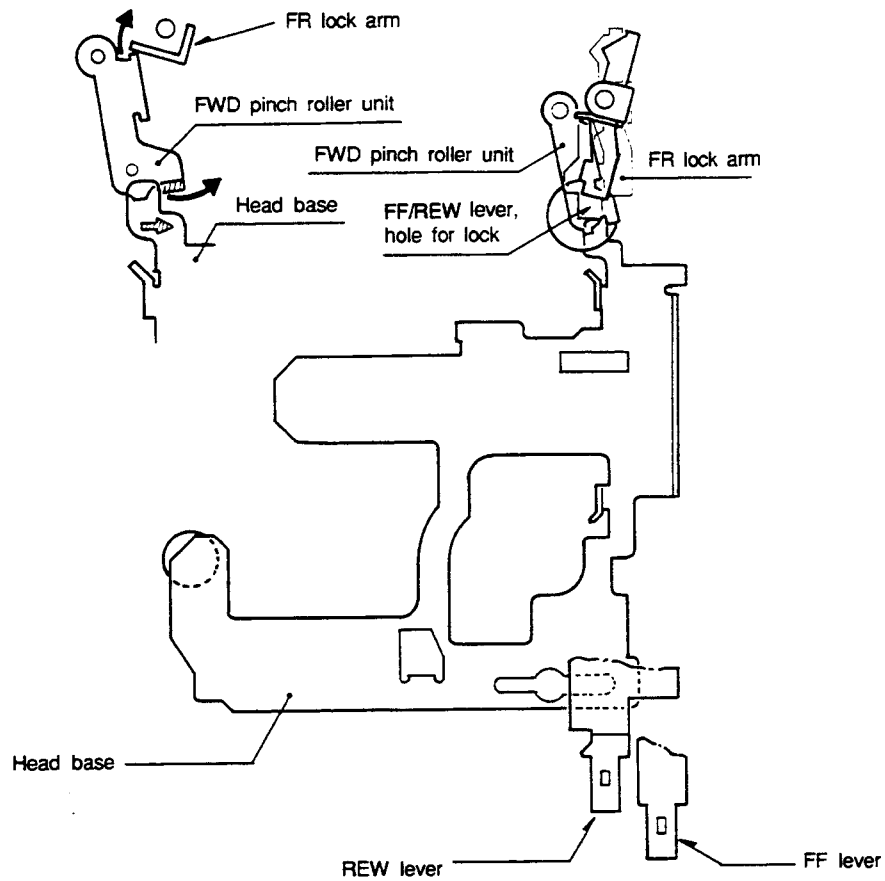


Fig. 10

The head base is moved back by switching the key-off solenoid off from the REW or FF condition, and is lowered (rotated) FWD pinch roller unit. The FWD pinch roller unit presses the bending part of FR lock arm to make it rotate in the direction that releases the lock. The lock of the FF/REW lever is consequently released. Subsequently, the head comes out from the ATSC to enable PLAY condition.

● Direction Changeover Operation

(1) FWD play operation

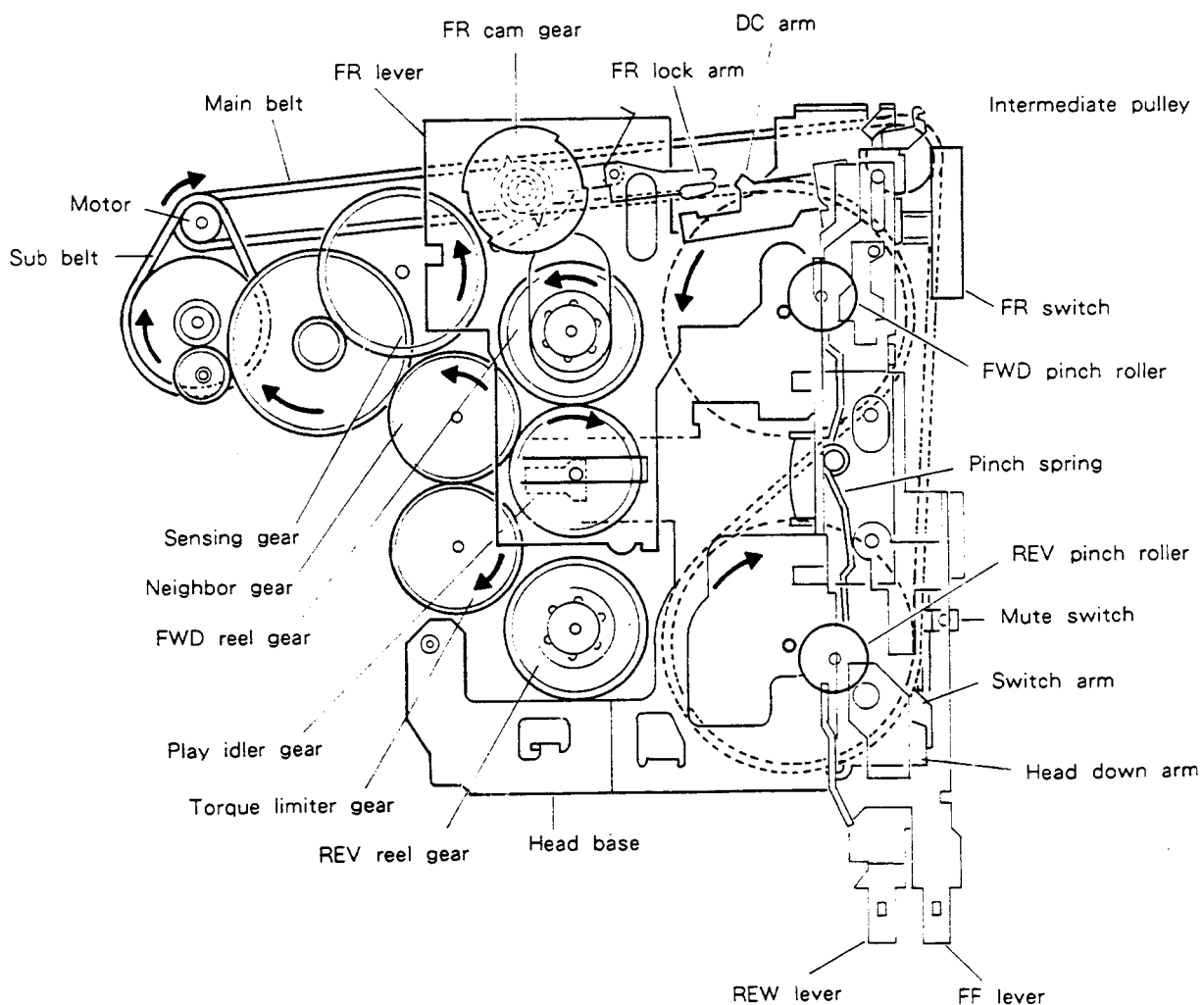


Fig. 11

When the FR lever is in the top position, the pinch spring is in the upper position to press the FWD pinch roller. The FR switch also moves upward and its reaction causes downward force on the FR lever. The spring attached to the FR lever applies upward force to the play idler gear from above to engage it with the neighbor gear and FWD reel gear.

The tape is driven in the FWD direction by a running motor and taken up by the REV reel gear via the torque limiter gear.

(2) Direction change operation

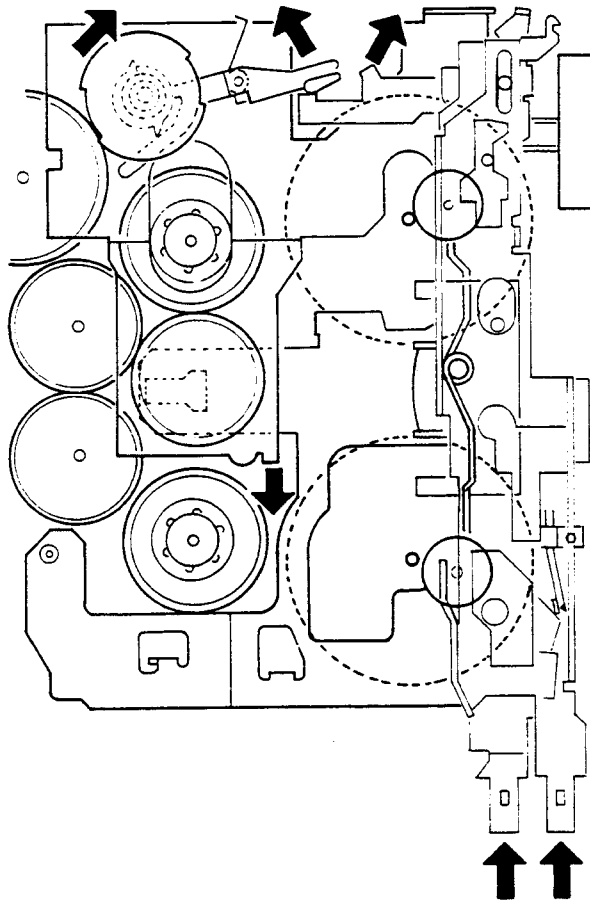


Fig. 12

The direction is changed by pressing FF and REW levers simultaneously. The DC arm turns along a cam groove of FF and REW levers to turn the FR lock arm. As the FR lever applies force from above downward, the FR cam gear turns and the notch meshes with the sensing gear. As a result, the FR lever moves downward. When FF and REW levers are kept pressed, the lock arm contacts the outside of the FR cam gear to prevent changeover between FWD and REV. Pressing FF and REW levers also cause the mute switch to be turned ON. In other words, muting is valid while FF and REW levers are pressed. (Fig.12)

(3) REV play operation

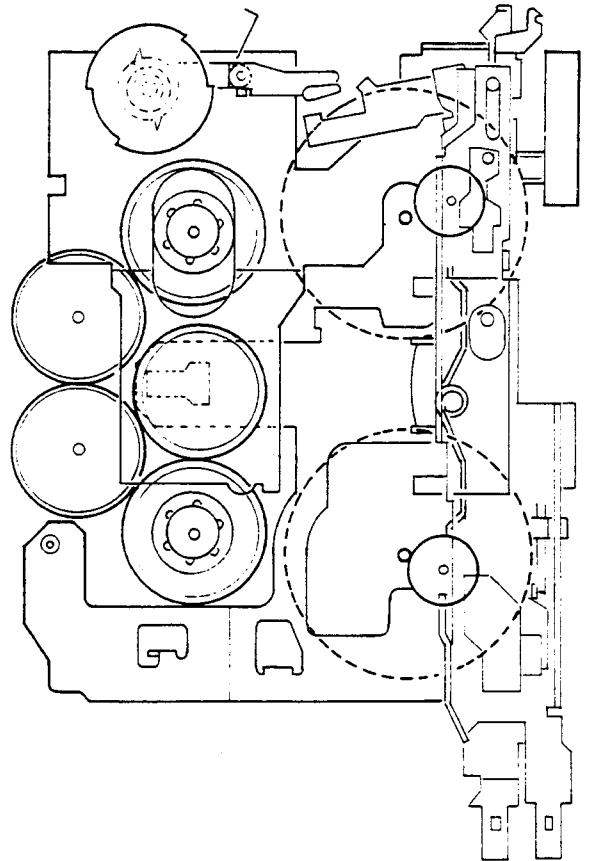


Fig. 13

Moving the NR lever up and down causes changeover among the pinch roller, FR switch, and play idler gear. With FF and REW levers having been returned, the FR lock arm returns to the normal lock position and locks the gear when the FR gear completes an one-half turn. The mute arm also returns to turn OFF the mute switch. The reverse play state is thus obtained. (The same applies to changeover from REV to FWD.)

● FF/REW Operation

(1) FWD play operation

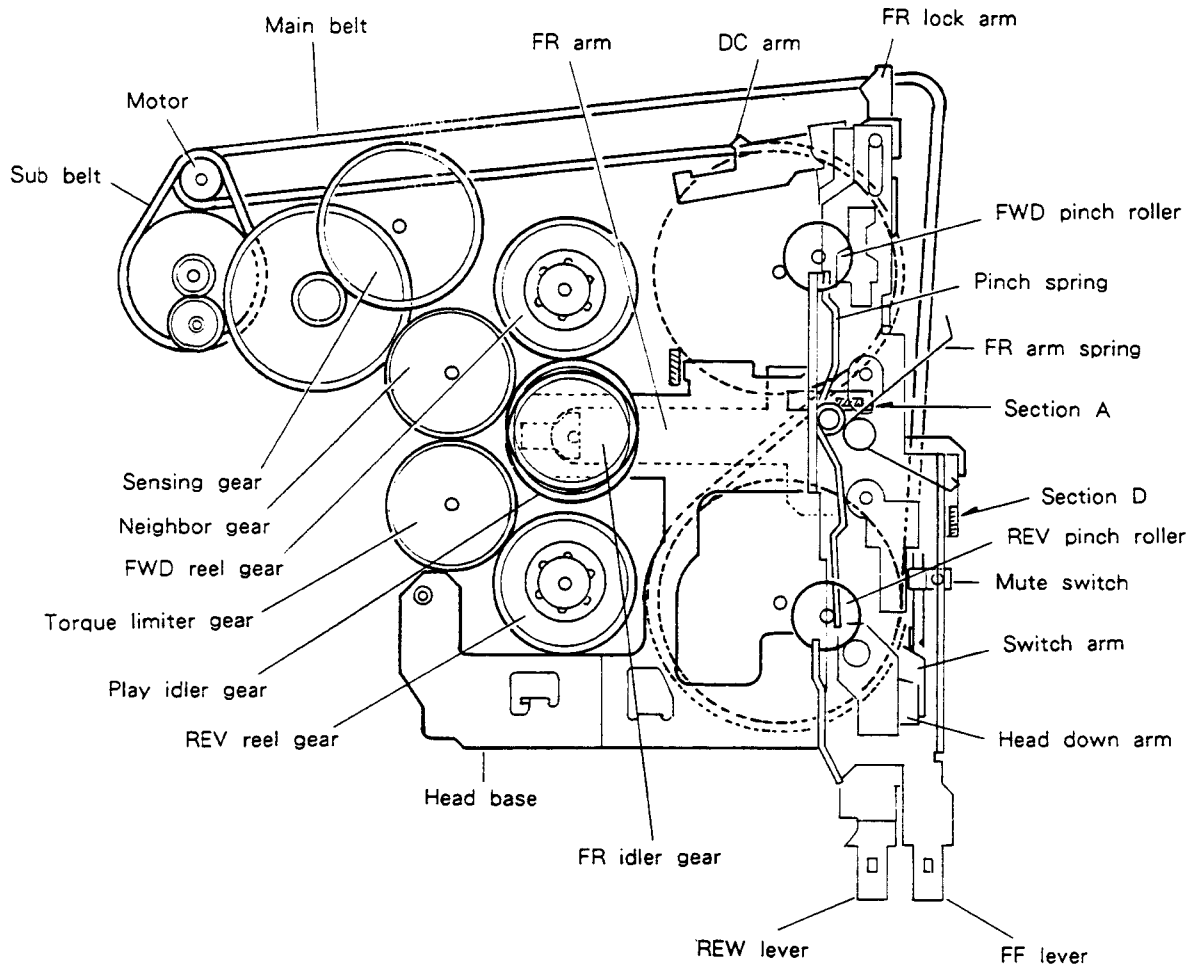


Fig. 14

In the FWD (REV) play state, the head base is fixed by a chassis stopper. The pinch spring presses the pinch roller into contact with a capstan to drive forward the tape. The REV reel gear takes up the tape via the torque limiter gear. In this case, the FR idler gear on the FR arm is centered by Section A of the head base and thus not rotating.

(2) FF Operation

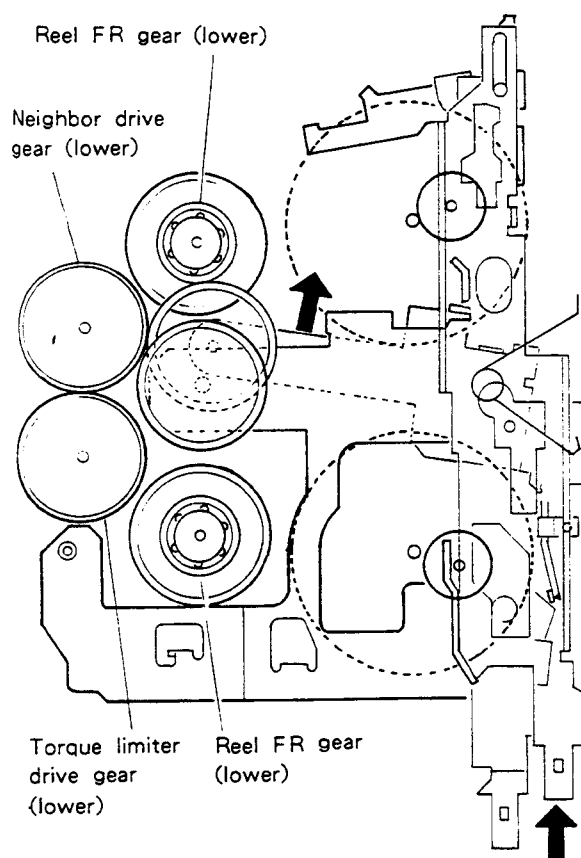


Fig. 15

FF operation is obtained by pressing and locking the FF lever. As the FF lever is pressed, the switch arm turns to turn ON the mute switch. The head base is moved backward along the FF lever cam groove.

As the head base moves backward to release the pinch roller from the capstan, the play idler gear is simultaneously disengaged from the reel gear. As the head base moves backward, the FR arm centered by Section A is put into rotation by the FR arm spring to engage with the FWD side FR gear.

The FF lever is locked by the FR lock arm and performs the FF operation. (Fig.15)

(3) REW operation

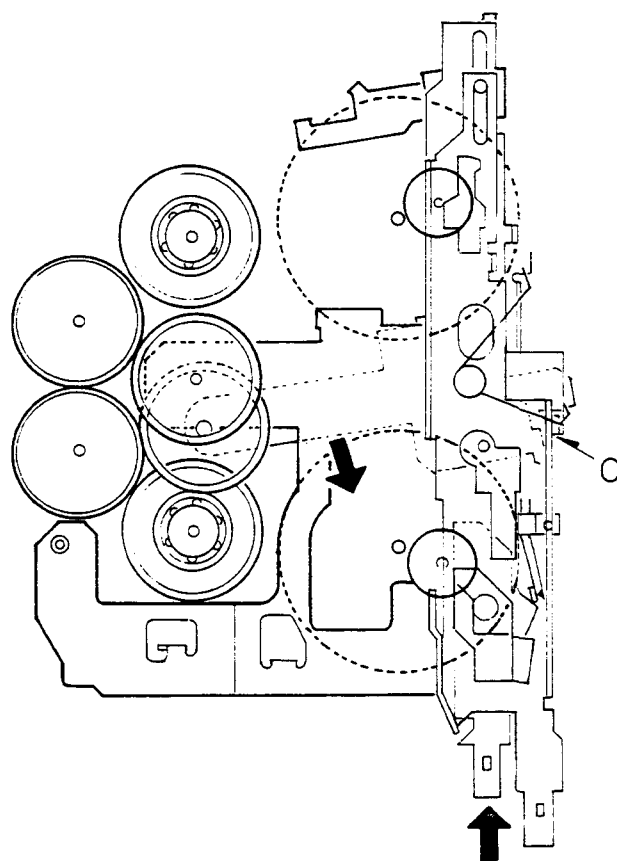


Fig. 16

Similar to the case of FF operation, pressing the REW lever causes the mute switch to be turned ON.

Simultaneously with release of the pinch roller from the capstan, the play idler gear is disengaged from the reel gear.

Section D of the REW lever presses a movable side of the FR arm spring, thereby engaging the FR gear to the FR gear on the REV side.

The REW lever is locked by the lock arm, performing the REW operation. This operation is cancelled when Section C is turned by the lever return spring. (Fig.16)

● Sensing Operation

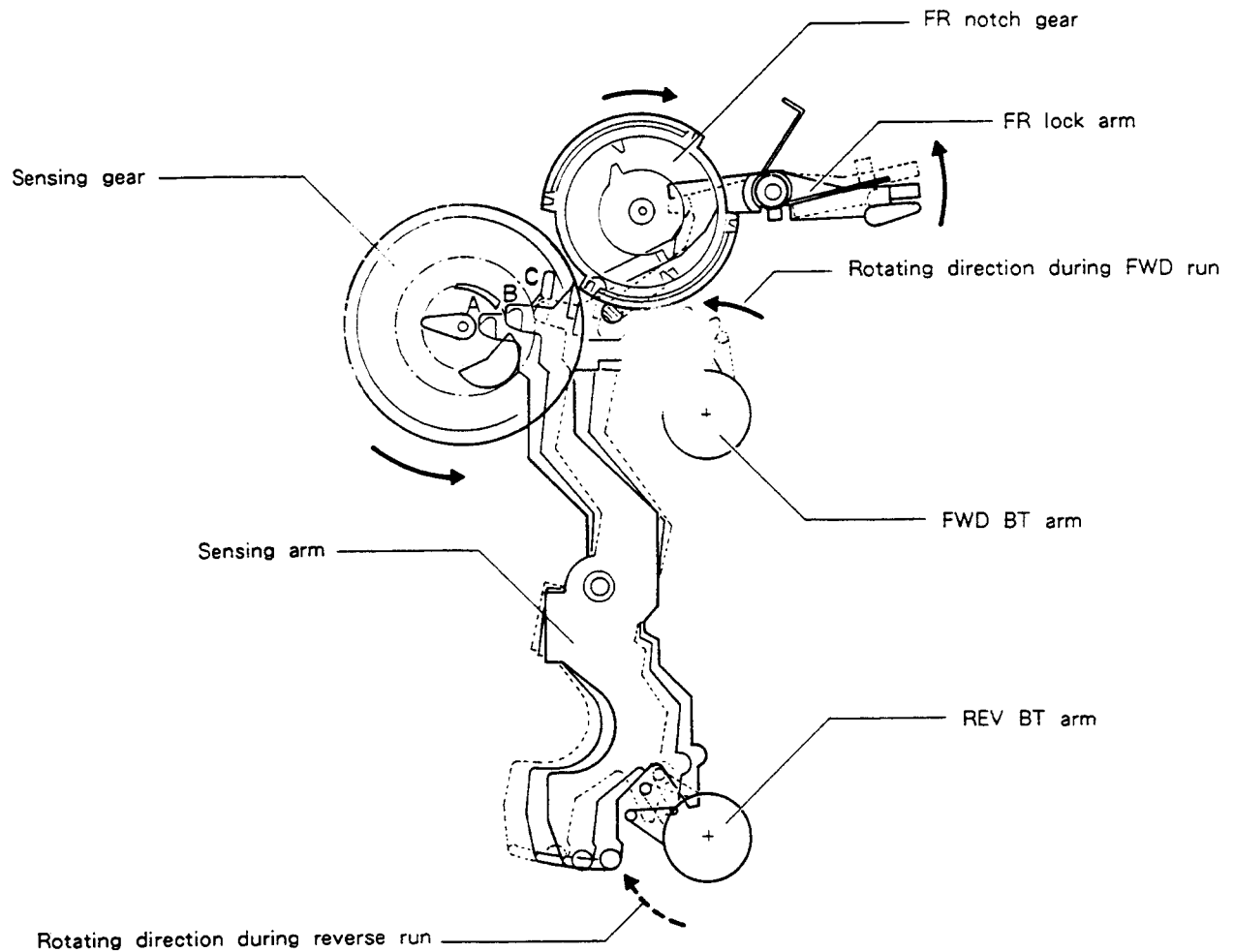


Fig. 17

1. During tape run: The sensing arm keeps oscillation between A and B under a force of the FWD BT arm (or REV BT arm).
2. At end of tape: The force of the BT arm is lost. The sensing arm stops at Position B, then pushed out to Position C by a crescent cam of the sensing gear.
3. Change of run direction: The FR lock arm turns counter-clockwise along with movement of the sensing arm. The FR notch gear is unlocked and begins to turn.